

## ABSTRACT

Title of Thesis: QUANTIFYING THE QUALITATIVE: VALUE AND THE  
CREATION OF PLACE THROUGH URBAN EVOLUTION

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Since WWII, there has been a severe disconnect between the intentions of written zoning ordinances and their resulting physical environments. Such codes and ordinances must reflect the observations of these results. The SmartCode provides a prescriptive solution; however, very few quantitative studies exist that justify its implementation.

If the current trend of using such rigid and formulaic zoning methods is to continue, then such standards must be humanistically based and not based solely upon abstract economic and engineering calculations.

This study sought to demonstrate that New Urbanist development has social, economic, and environmental benefits that can not be obtained by conventional suburban development through a quantitative and qualitative comparative analysis. Although the results of this study did not prove definitively that many of these criteria can be objectively measured, it has proposed numerous promising methods that require additional research in order to test their efficacy.

QUANTIFYING THE QUALITATIVE:  
VALUE AND THE CREATION OF PLACE  
THROUGH URBAN EVOLUTION

by

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2004

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# CHAPTER 1

## THEORY

### 1.1 Premises of this study

*A. Economics is the predominate generator of urban form in post WWII America.*

Although other forces shape our environments in a capitalist society, none are as influential as economics. The most effective vehicle for change, in both the private and public sectors, is the dollar. It is stronger than any other motivational incentive. In order to “better” the existing environment and current pattern of development one must justify not only its social and environmental merits/ benefits, but most importantly must demonstrate that it is economically lucrative. The projects that will be most successful will simultaneously satisfy the demands of all three criteria. Although the New Urbanism has done a great job of justifying the social and environmental benefits of their communities, more research needs to be done in order to justify its economic benefits.

Economics has always been and always will be the driving force behind the form of American towns and cities. How this notion is perceived and applied to the landscape however is variable. In the historical context of real estate economics, the model of valuation clearly reflects that of the transect; the theory of the “fried egg” pattern and the “pure” geometric economic model in which land values were highest at the center of town/ closest in proximity to an amenity (i.e. a port, crossroads, or CBD), thus encouraging higher intensities of land use at its center. Manchester, NH during the late 19<sup>th</sup> century is a good example of this. Both the highest land value and intensity of land use are located adjacent to routes of transit (along the river and along Main St.). As one gets further from these amenities the value and massing subside, eventually merging with the surrounding rural landscape. This can also be clearly seen in such historical examples as Chicago, Philadelphia, Charleston and Savannah. Such a pattern of urban growth allowed for the

evolution of a town, providing a source of unlimited financial wealth.

Just as there were examples that clearly adhered to this model, there were many that did not. Such towns lacked a coherent sense of organization and their valuation and life span suffered accordingly. The most successful towns and cities have been those which began with a single vision and a coherent geometric plan that could adapt and be added to over time.

Since transportation was mainly limited to public transit or by foot, this model then dispersed outward in both land value and intensity/ massing until it merged with the surrounding landscape. This appears to be the origins that spawned the myth that town planners in the past possessed an innate understanding of the concepts of the transect. In some cases, this may have been true, however the purity of the diagram created by economic demands, paired with the existence of very a very meager population, prompting many cities to be initially plated as only a neighborhood (thus “walkable”) and the fact that these towns were sited in the virgin landscape on prime locations forces the notion that they had to integrate with the landscape because there was no other option. Such considerations as “walkability, the distribution of massing, and the placement of uses were not issues that were readily available for conscious or moral debate at this time, they were realities governed by the inhibiting “natural laws” of a lack of mass transportation and economics. The size of such towns and cities was limited by their means of transporting goods, thus most were very compact and walkable.

*B. Man is a part of nature*

*C. Beauty and value: That which is aesthetically pleasing is often rare, that which is rare is valuable.*

*D. Evolution of urbanism and architecture: Long term benefits vs. short term expenses. It is more economical to build-in modifications for anticipated growth than it is to build incrementally.*

One tangential effect of this is that incremental development creates a fragmented sense of place as there is no sense of continuity as buildings come and go with planned obsolescence.

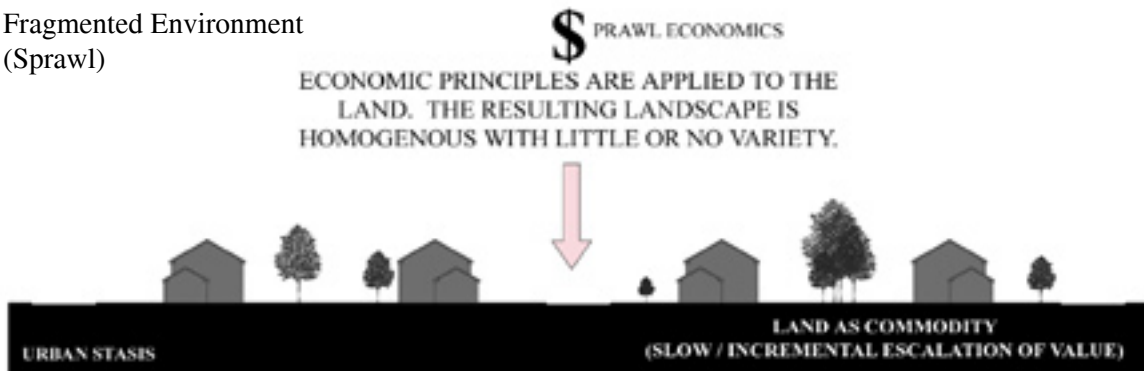


Figure 1.01: Relationship between economics and urban form

Fragmented Environment  
(Sprawl)



Fragmented Environment  
(Sprawl)



Immersive Environment



## **1.2 Man and Nature:** Distinction between the ‘Built’ Environment and the ‘Altered’ Environment

“Country and city are united in an insoluble partnership, which is equitable and for their mutual profit.”

- Wilbert L. Anderson

For the purposes of this study and as a result of its outcome, I propose that the term “Altered” be substituted in place of “Built” in the context of the Built Environment as I intend to demonstrate that Man’s impact on the landscape, no matter how drastic, still does not completely sever it from the forces of nature. Thus both are eternally bound to one another and exist in a mutual balance, each acting on and effecting the other. Obviously the degree to each can be debated indefinitely.

It is also important to demonstrate that all environments are part of a linear declensional model, otherwise known as the Transect (see Figures 1.02 and 1.03). Originally developed as a tool to chart the environments across new territories and lands, the Transect has recently been applied to the planning industry to better understand an environment’s organization.

“Altered” is a more appropriate term because it implies that the modified landscape is still a part of the originating environment. The Altered Environment may be very different in its elemental and formal composition as opposed to the Natural Environment, however both are subject to the same forces of nature and the space that flows through each is continuous.

The alteration of the environment can also be viewed as a natural phenomenon, as in the case of beaver dams. Beavers instinctively alter their surrounding “natural” environment to create a habitat that suits their own requirements, just as humans consciously alter their surrounding environment to satisfy their own needs and desires. Both of these acts of creation or building can be perceived as destructive in their initial phases. Beavers use their teeth as tools to clear the land and alter trees to become elements of construction just as man now uses machines as tools to clear the land and alter natural resources to become the elements of construction. Man’s impact is of a much different scale.

Figure 1.02: A Natural Transect: Canaveral National Seashore, FL

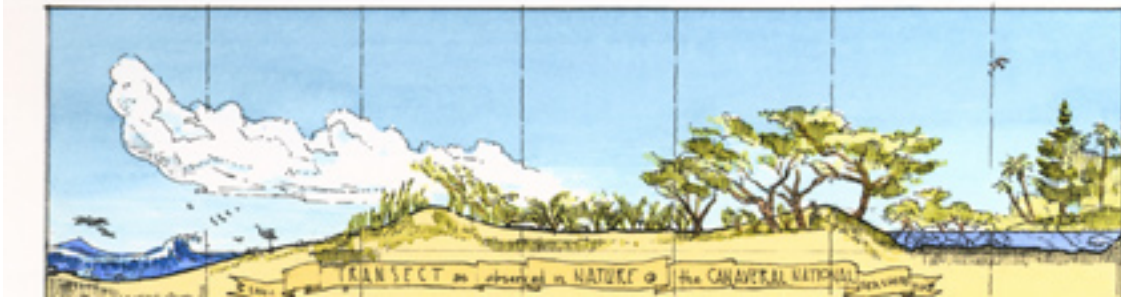
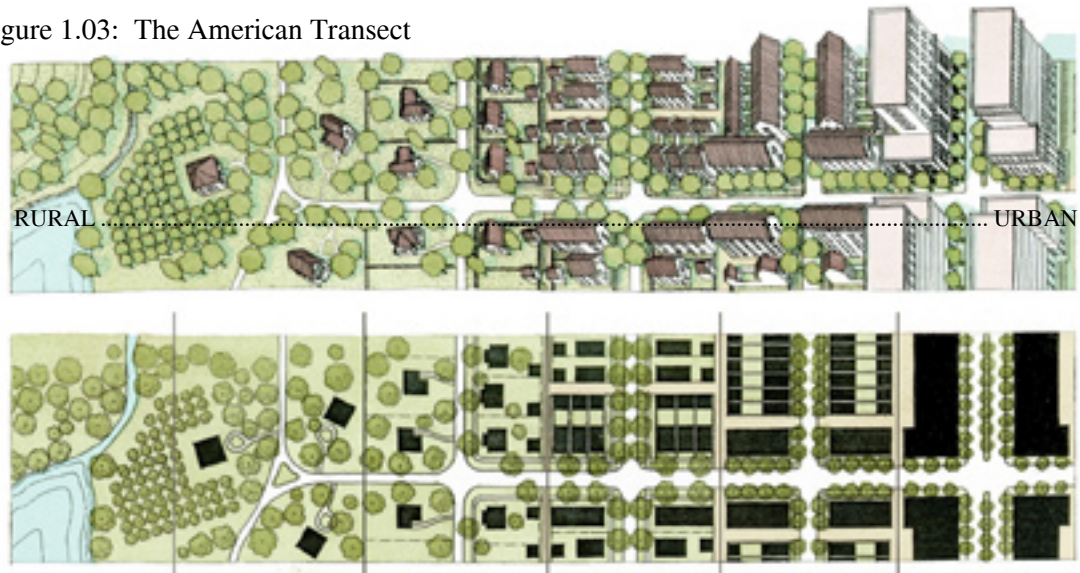


Figure 1.03: The American Transect



“Among us it is widely believed that the world consists solely of a dialogue between men, or men and God, while nature is a faintly decorative backdrop to the human play. If nature receives attention, then it is only for the purpose of conquest, or even better, exploitation-for the latter not only accomplishes the first objective, but provides a financial reward for the conqueror... Our failure is that of the Western World and lies in prevailing values. Show me a man-oriented society in which it is believed that reality exists only because man can perceive it, that the cosmos is a structure erected to support man on its pinnacle, that man exclusively is divine and given dominion over all things, indeed that God is made in the image of man, and I will predict the nature of its cities and their landscapes. I need not look far for we have seen them-the hot-dog stands, the neon shill, the ticky-tacky houses, dysgenic city and mined landscapes. This is the image of the anthropomorphic, anthropocentric man; he seeks not unity with nature but conquest. Yet unity he finally finds, but only when his arrogance and ignorance are stilled and he lies dead under the greensward. We need this unity to survive.” (McHarg, 24)

### 1.3 Rationalism for 'good' or 'evil'?

The role of the landscape and Man's view of it has changed drastically throughout history. Man's approach to altering the landscape has become increasingly specialized over time. Since the Age of Enlightenment, Humanism and Rationalism have been utilized and have evolved into very different entities than when they were originally conceived.

During the Renaissance and up until the beginning of Modernism, Humanism and Rationalism were utilized for the betterment of the human habitat. With the advent of industrialization, Rationalism became harnessed to economics as humanism and such intangible attributes as community and quality fell by the wayside due to an ever increasing reliance on efficiency and scientific quantification..

Humanism and Rationalism began to be used for specialized interests at the expense of unforeseen tangential effects. As economics became the predominate generator of form, anything that was not readily quantifiable, those criteria that contributed to the accuracy of pro forma calculations, would be omitted because of increased associated risk.

Unless we are able to quantify such qualitative aspects of our environment and relate them to value our environment will continue to digress.

Figure 1.04: A typical strip shopping center



Figure 1.05: Typical suburban tract housing



What human being could argue that we should not strive to better the human habitat while maintaining the integrity of the natural environment?

Processes are so simplified now, one does not need to think. Everything is automated and calculated to the degree that conscious decision is omitted. Humans are taken out of the decision making process. Facts, figures and statistics determine our fate.

#### **1.4 Rationalism without Humanism:**

The fragmented landscape of post WWII America is a direct result of the fragmented policies that have shaped it. There has been a severe misappropriation and misapplication of rationalism. Rationalist policies that are based on input from specialized interests consultants with focused areas of expertise have often failed to see the overall consequences of their actions. These specialists “fail to see the forest through the trees.” We need not overlook the real reason why we are designing these environments; for it is human habitation, not vehicular movement.

The current means of assessing and regulating the creation of environments does not accurately relate to how one actually perceives or experiences a space. Ordinances fail to recognize the connection between quantitative regulations and the respective resulting experiential reality. (i.e. 12’ travel lanes do give greater freedom of movement for vehicles than 10’ travel lanes, however, in a residential setting this can have disastrous tangential effects. 12’ lanes facilitate faster speeds and greater crossing distances for pedestrians, a lethal combination.)

## **1.5 Value in the Age of Economics and Statistics**

“We have but one explicit model of the world and that is built upon economics. The resented face of the land of the free is its clearest testimony, even as the Gross National Product is the proof of its success, Money is our measure, convenience is its cohort, the short term is its span, and the devil may take the hindmost is the morality.”

“Neither love nor compassion, health nor beauty, dignity nor freedom, grace nor delight are important unless they can be priced. If they are non-price benefits or costs they are relegated to inconsequence. The economic model proceeds inexorably towards its self-fulfillment of more and more despoliation, uglification and inhibition to life, all in the name of progress-yet, paradoxically, the components which the model excludes are the most important human ambitions and accomplishments and the requirements for survival.” (McHarg, 25)

Prior to WWII land value in America was directly related to its use, i.e. farming, cattle... Now that land is seen as a commodity, it is merely seen as an aesthetic and recreational amenity, thus by McHarg’s philosophy it carries no inherent monetary value other than that which is speculative. In order to really change current market trends one must employ innovative and progressive financing solutions to incentivize such projects.

### **Historical background of the financing of TNDs vs. CSDs**

Historically, New Urbanist developments have been perceived by financiers as higher risk investments than their CSD counterparts. This assumption is mainly attributed to the mix of building types commonly found in NU projects. It has also been shown, however, that the added risk premium for such projects seems to vary depending on their location within the transect, the overall size of the project and the project type.

“The complexity of developing and meshing multiple uses raises the risk level... Multiple uses add a layer of complexity that many financiers found difficult to evaluate for a variety of reasons. Increased uncertainty raises risk and required returns for investors and lenders.” (Rybczynski, 23)

Ironically, a TND’s largest financing hurdle is also its largest investment advantage. It is because of a TNDs mix of building types that creates this distinct

financial advantage, synergistic valuation.

Synergistic valuation is formed through the creation of such intangible qualities as a sense of community and the quality of a neighborhood. These qualities are, for the most part, not readily financially quantifiable; therefore having very little impact in the financing decisions of such projects.

As a neighborhood matures, synergistic valuation escalates. Due to this fact, NU developments also do not adhere to DCF (Discounted Cash Flow) analysis because their financial gestation period is much longer than that of CSDs. In fact, because of their unique ability to self generate value due to the presence of such intangible qualities as a sense of community, the valuation of NU projects is actually the complete opposite of CSDs.

Just as with DCF models, TNDs are unable to be analyzed by capitalization rates because such analysis relies on the sales information of comparable properties. Since little, if any, data exists on the sales of TNDs nationwide, much less regionally, it is currently nearly impossible to conduct an accurate analysis using this method.

Because of their variable nature, NU developments also defy real estate commodification. In turn, the financing attempts of such projects often face stern opposition in today's product driven real estate market because of four main reasons:

1. *Specialization*: Due of the current trend of market specialization, most investors, developers, and builders today lack experience with mixed-use development.
2. *Intangible amenities*: Most investors' financing models have no place for intangible amenities that are provided in such communities; ironically, the very financial incentive that exists for savvy investors.
3. *Lack of market familiarity and data*: Due to the fact that there exists a general lack of market familiarity and understanding of the product, as well as a general lack of quantifiable data on such a topic, the following is a self perpetuating reality: NU developments remains a rarity in most investors' portfolios, because of very little competition, financing remains a challenge, therefore, very few developments are built and only a small fraction of the market is exposed to such projects.
4. *Quantity vs. Quality*: Consumers continually associate larger lot sizes with more value (Logan, 91). It is because of this predominant misconception as well as a general lack of

market familiarity with NU developments that many potential home buyers fail to realize the benefits of living in a TND.

Such projects can not be assessed by using the methods of CSD evaluation, but rather new methods must be developed.

I believe that assessed risk is inverse in proportion to the degree of deviation from the transect. In other words, the more transect violations a property has the lower its value and conversely, the more immersive an environment it the more valuable it is.

Unless the market changes its way of analyzing the feasibility of such projects, their only future may lie in some form of public sector intervention (some type of guarantee, credit enhancement, or tax benefit such as in the current LEED program for individual buildings).

In order to justify such intervention, NU projects must prove that they have benefits that are not obtained by CSDs. Although much qualitative research exists on such a topic, very little quantitative data exists.

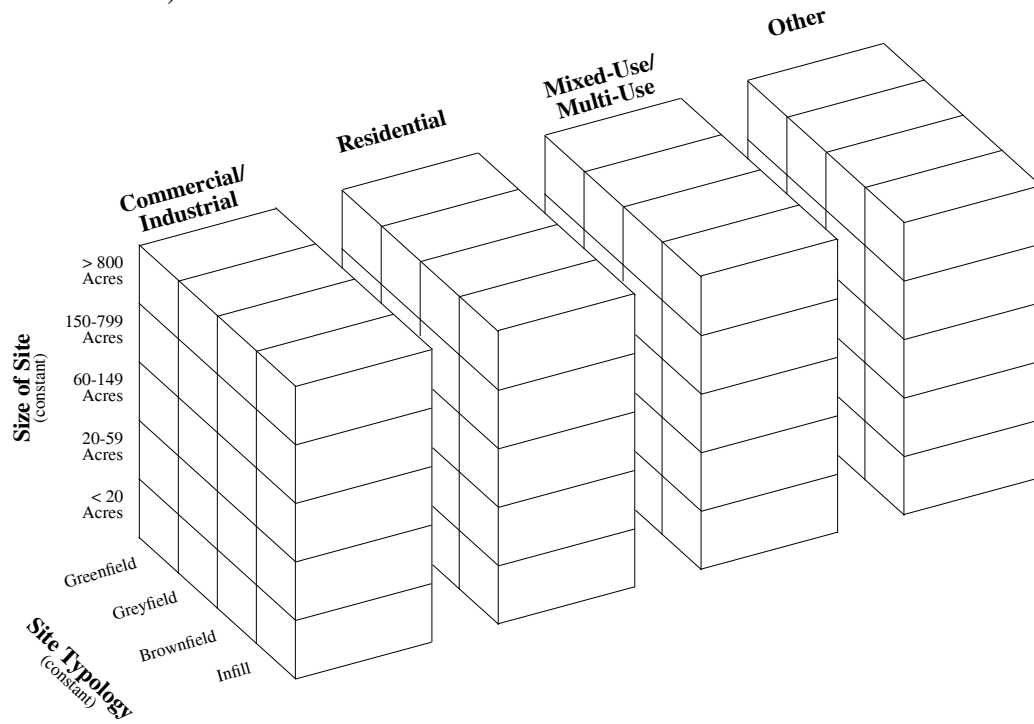


Figure 1.06: Commodification of Real Estate: ULI model

### Taxonomy Matrix of Standard Real Estate Products

#### ULI Model: Typologically Based

(New Construction)



Commercial/ Industrial	Residential	Mixed-Use/ Multi-Use	Other
Hotels	Planned communities	Not Applicable	Parks
Industry/ office	Housing - single family		Public Building
Office buildings	Housing - multifamily		Parking Facilities
Resorts	Assisted living		Other
Town centers			
Urban entertainment			
Shopping center			

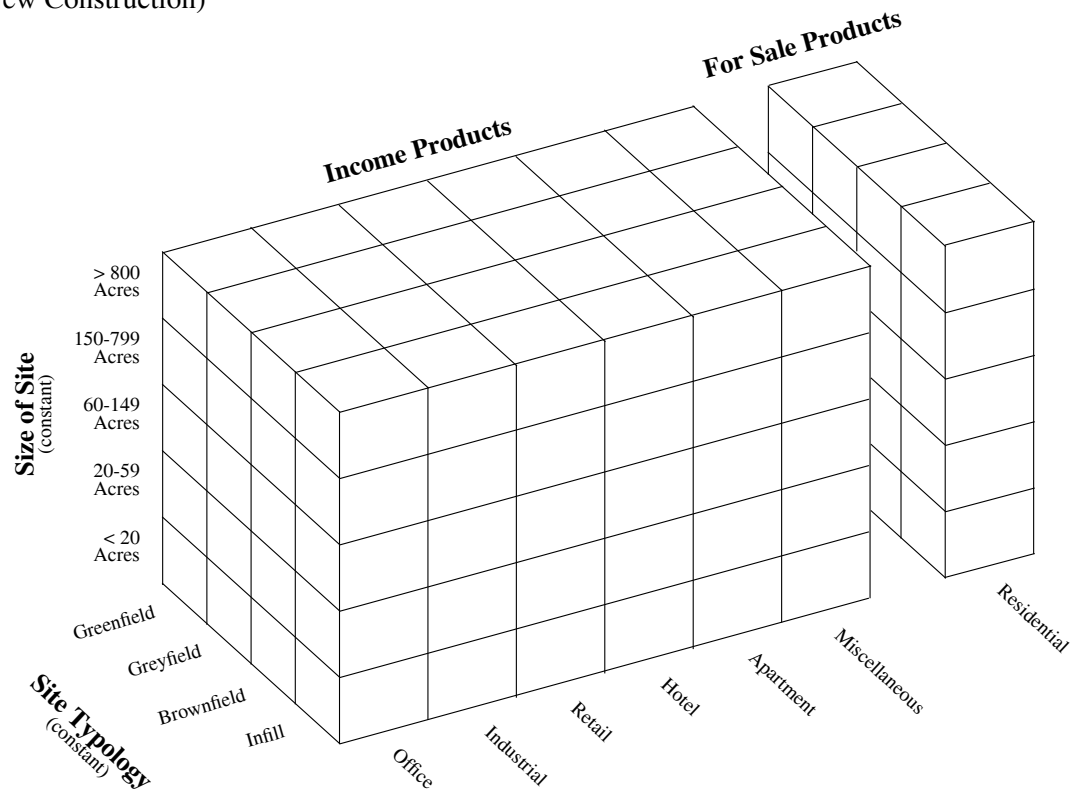
**\* Note: In a market-driven real estate market, the financial structure of a development and its development typology are inextricably linked. The ULI model fails to differentiate between the financial structure of each of typology. It also fails to differentiate between segregated and integrated uses.**

Figure 1.07: Commodification of Real Estate: Chris Leinberger (Arcadia Land Company) model

## Taxonomy Matrix of Standard Real Estate Products

### Leinberger Model: Economically Based

(New Construction)



### Income Products

#### Office

Build-to-suit  
Speculative suburban low-rise

#### Industrial

Build-to-suit  
Speculative warehouse (28-foot clear span)  
Research and development/ ex

#### Retail

Neighborhood (between 80-120,000 sq.ft.)  
Power (between 120-400,000 sq.ft.)  
Urban entertainment

#### Hotel

Limited service  
Full-service business

#### Apartment

Low-density suburban (over 150 units at 15-20 DU/ acre)  
High-density suburban (over 200 units at over 20 DU/ acre)

#### Miscellaneous

Self-storage  
Assisted living

### For Sale Products

#### Residential

Entry-level attached  
Entry-level detached  
Move-up attached  
Move-up detached  
Executive detached

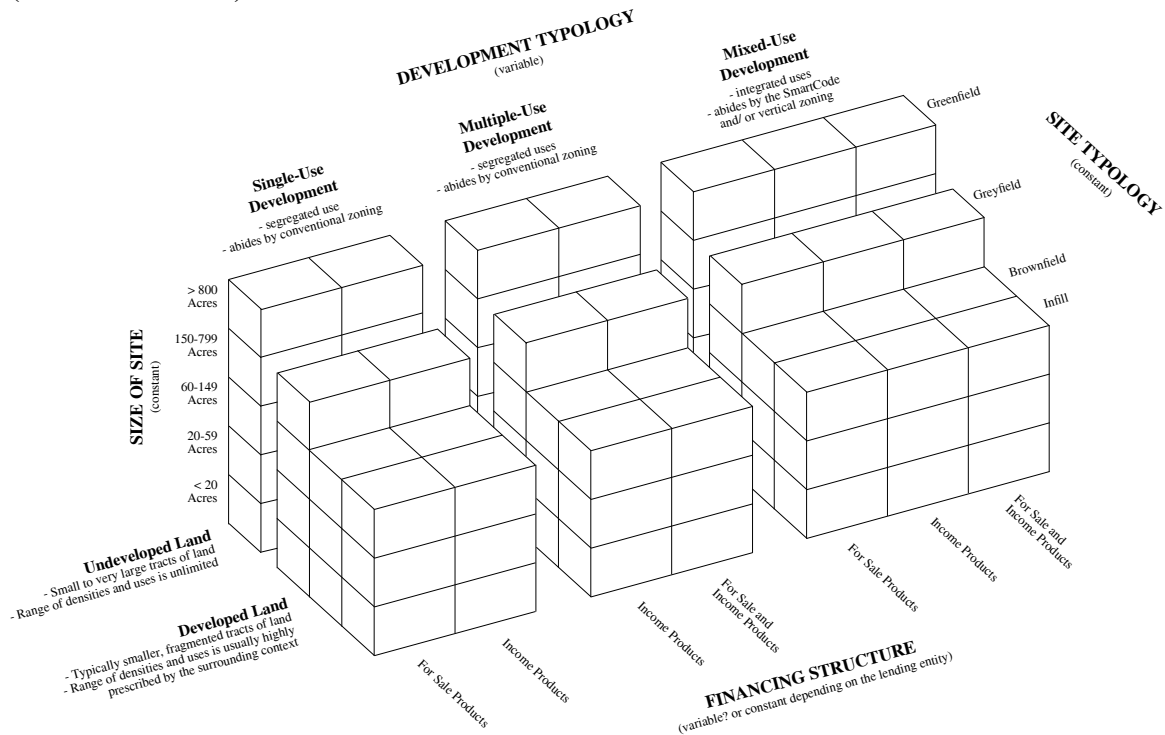
**\* Note: The Leinberger model cannot categorize multiple-use or mixed-use projects (those that have multiple income or for sale products or both income and for sale products); it therefore, also fails to differentiate between segregated and integrated uses.**

Figure 1.08: Commodification of Real Estate: Proposed model, all typologies are accounted for

## Taxonomy Matrix of Standard Real Estate Products

### Zonarich Model: Topologically and Economically Based

(New Construction)



#### Single-Use Development

##### For Sale Products

- Residential

##### Income Products

- Office
- Industrial
- Retail
- Hotel
- Apartment
- Miscellaneous

**Single-Use Development:** A development, in one or several buildings, that is comprised of a single revenue-producing product.

**Multiple-Use Development:** A development, in one or several buildings, that combines two or more significant revenue-producing products **segregated** into homogenous use zones.

**Mixed-Use Development:** A development, in one or several buildings, that combines at least three significant revenue-producing products (at least one of which shall be a residential type) that are **physically and functionally integrated** and developed in conformance with a coherent master plan.

#### Multiple-Use Development

##### Income Products

- Any combination of 2 or more income producing products that are segregated into homogenous use zones
- Office and retail
  - Office and industrial
  - Retail and apartments
  - Retail and hotel
  - Retail, office and apartments
  - Etc...

##### For Sale and Income Products

- Any combination of for sale and income producing products that are segregated into homogenous use zones
- Hybrid development (TND/ CSD)
  - CSD master planned communities
  - Etc...

#### Mixed-Use Development

##### For Sale Products

- Any combination of 3 or more for sale products (at least one of which shall be a residential type) that are physically and functionally integrated and developed in conformance with a coherent plan
- Residential and Live/ Work units

##### Income Products

- Any combination of 3 or more income producing products (at least one of which shall be a residential type) that are physically and functionally integrated and developed in conformance with a coherent plan
- Retail, office and apartments
  - Retail, hotel and apartments
  - Etc...

##### For Sale and Income Products

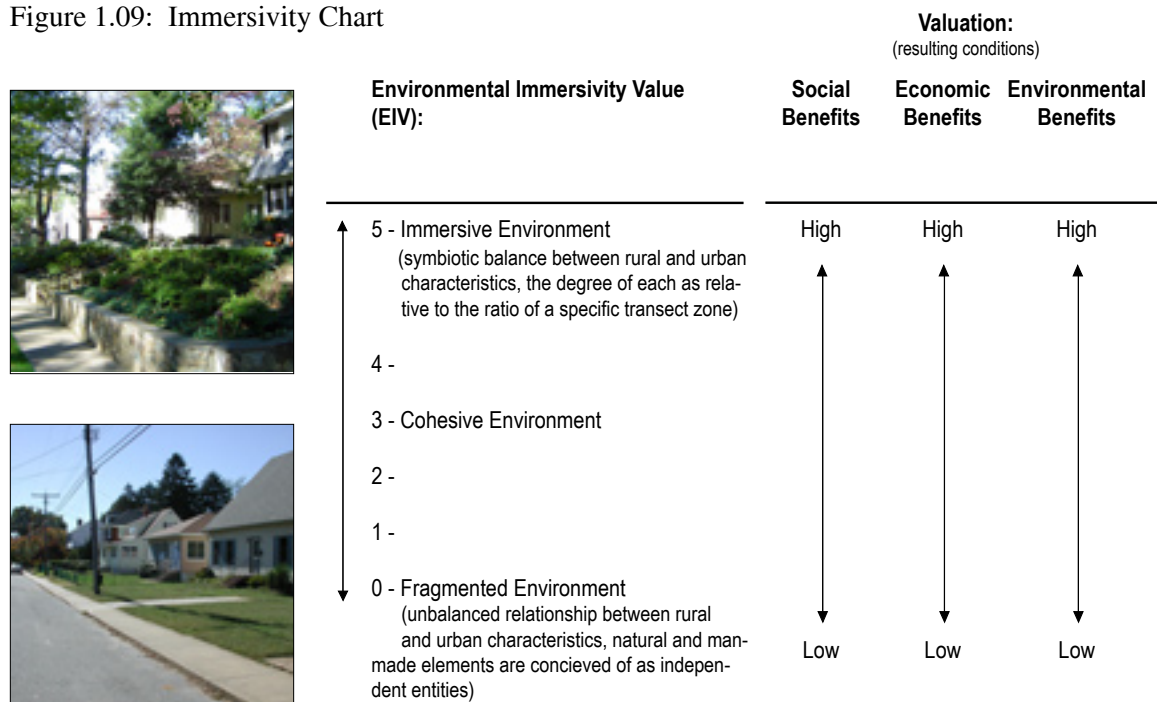
- Any combination of 3 or more for sale and income producing products (at least one of which shall be a residential type) that are physically and functionally integrated and developed in conformance with a coherent plan
- Downtowns/ Town Centers

## 1.6 The Theory of Immersivity

*Immersivity*: the degree of environmental cohesion in a given area.

Regardless of scale, degree of urbanization, density, bulk, usage, or style: every environment can be categorized according to its degree of immersiveness. For example, the Immersivity of downtown manhattan is comparable to that of Charleston, San Francisco, Annapolis, and Alexandria. Although their scale, degree of urbanization, density, bulk, usage, and style are different, each embodies the characteristics of an immersive environment.

Figure 1.09: Immersivity Chart



Immersive environments can, and should, have diversity amongst consistency. The difference between cohesion and immersivity is that an environment can be cohesive, but it does not have to be immersive.

For example, a Master Planned Community (MPC) can be built according to a *cohesive* master plan, yet the resulting environment(s) may be of a homogeneous character, with isolated pods of uses and building types. Cohesion does not insure integration and diversity.

Another example is Oscar Neimar's city of Brazilia. Here the entire city was built accord-

ing to a extremely detailed and sophisticated cohesive master plan, yet the resulting environment is not immersive.


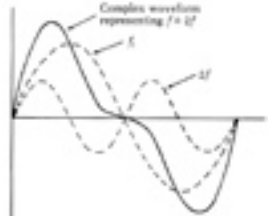
Natural and man-made elements “evolve” to conform to their environment. In the transect, as the environment becomes increasingly urban, natural elements shall assimilate and adapt to the urban condition, where as the opposite is also true; as an environment becomes increasingly rural in character, elements of an urban disposition are increasingly absorbed and conform to the natural landscape. The degree to which these two realms of elements are integrated according to their state of urbanity, shall be know as their degree of immersiveness, otherwise known as Immersivity. Immesivity is calibrated as a declensional condition, encompassing the entire spectrum of natural and altered environments. It uses a set of criteria to evaluate the relative cohesion of an area and its overall quality.

The theory of Immersivity is similar to that of the existing theory of real estate in which values are highest the closer the proximity to an amenity. Immersivity is just as valid as this, but since it is inherently much more complex and requires an intimate understanding of how the altered environment is created and shaped, it has alluded real estate economists for some time. It is, in fact, based on many predominating misconceptions held by the same group. For example, most real estate economists would argue that the criteria used to determine the quality of an environment and its resulting quality of life to be subjective. In fact it is not.

There are numerous tangible physical characteristics, that once understood, can classify and identify environments. Such characteristics are often innately observed. Such a rating system will objectively classify environments based upon criteria that results in places that are indisputably superior in their ability to provide a higher quality of life than others. Instead of the amenity being a figural element or specific location, the amenity is the environment itself; thus an environment of higher quality will command a higher price than an environment of lesser quality.

This theory is predicated on the assumption that choice and diversity is a good thing. This logic is extrapolated from ecology in which a major criterion of identifying a healthy ecosystem is its diversity of species.

Figure 1.10: Multidisciplinary comparative chart of composition: urbanism, color and sound

	High Value		Low Value
	<b>HARMONY</b> Combination of elements to achieve a harmonious result Rich, sophisticated, & complex Difficult to create	<b>CONTRAST</b> Contrasting composition of elements Rich, sophisticated, & complex Difficult to create	<b>FRAGMENTATION</b> Fragmented composition of elements Simple, unsophisticated Easy to create
<b>Urbanism / Environments</b>  Elements: Natural and Man-Made	 Champs E'leeses, Paris   A traditional American small town	 Central Park, NYC   Bryant Park, NYC	 Modern strip shopping center   Suburban tract housing development
<b>Vision / Color</b>  Elements: Tones of differing values	 Consonance /Harmony		Dissonance / Dullness
<b>Sound / Music</b>  Elements: Tones of differing values	Consonance /Harmony 		Dissonance / Noise

Immersive environments at the scale of the region:



Figure 1.11: Highly immersive urban environment (Paris, France)

Demonstrates the cohesive integration of natural and man-made elements in an urban setting. Both types of elements strive for a common goal: to define the public realm. There is also a dynamic contrast, yet consistency, between natural and man-made elements. Paris is a good example of the 'natural laws of urbanism.' Since this environment is more urban in character than rural, natural elements assimilate to the urban condition, where as the opposite is true for the rural environment pictured below.



Figure 1.12: Highly immersive rural environment (Small Town?, MA)

High degree of immersiveness; cohesive integration of natural and man-made elements in a rural setting. Notice how the degree of immersiveness is irrespective of style or the degree of urbanity.



Non-Immersive environments at the scale of the region:



Figure 1.13: Low degree of Immersivity in a quasi-urban environment (Houston, TX)  
Lack of integration between natural and man-made elements. Man-made elements completely dominate the landscape. Land uses are segregated into homogeneous euclidean zones, resulting in a fragmented environment lacking any sense of cohesion. Space is amorphous and undefined.



Figure 1.14: Low degree of Immersivity in a quasi-rural environment (Sprawl, America)  
Lack of integration between natural and man-made elements. Man-made elements completely dominate the landscape. Single land use. Objects set within the landscape, space is amorphous and undefined.



All of the environments shown in figures 1.15 - 1.17 are highly immersive to the extent of that which is immediately perceptible by the observer. Of course, if one was to examine them both on a more regional scale, each would have far different degrees of contextual immersiveness. Although their respective architectural styles and approach to the integration of natural and man-made elements differ greatly, both environments demonstrate a high degree of immersiveness. Both have an aesthetic and fractal consistency from part to whole.

Immersive environments at the scale of the building:



Figure 1.15: Villa Savoy, Paris  
Le Corbusier, 1931

High degree of Immersivity within the immediate context of the site. The building is Immersive within a drastically Altered landscape. Building as an ideal form dominates the landscape. Notice how the building is disengaged from the natural elements of the site, and even the materials are of a machined aesthetic. It is apparent that one is an observer of the landscape as seen by the framing of views out to the landscape. Other than visually, the viewer is completely disengaged from the “natural” landscape.

Immersive environments at the scale of the building:



Figure 1.16: Fallingwater, Bear Run

Frank Lloyd Wright, 1935

High degree of Immersivity within the immediate context of the site. The building is Immersive within the Natural landscape. The building is circumstantial and conforms to the idiosyncrasies of the site. The distinction between inside and outside is blurred by the dynamic protruding volumes that engaged the landscape, further integrating it with its context.

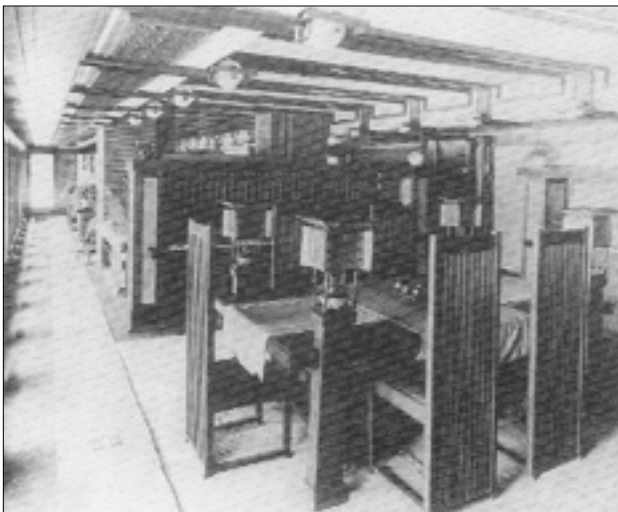


Figure 1.17: Robie House, IL

Frank Lloyd Wright, 1909

High degree of Immersivity within the interior environment. This is accomplished with Wright's use of a simple palette of natural materials, common proportions, the use of linear elements, etc. to create a cohesive environment.

Non-Immersive environments at the scale of the building



Figure 1.18: Laurel, MD Non-Immersive rural sprawl  
The misappropriation of urban elements in an otherwise rural setting



Figure 1.19: New York, NY Non-Immersive urban sprawl  
The misappropriation of rural elements in an otherwise urban setting



Immersive environments at the scale of individual urban and natural elements



Figure 1.20: Forest Hills Gardens, Queens NY  
A symbiotic relationship of rural and urban elements further enhances the cohesion and complexity of an environment. Slight idiosyncrasies like this emphasize the uniqueness of a place, making it more imageable. In the more rural Transect zones, man-made elements assimilate to the rural character of the place, as the opposite is true of urban Transect zones.

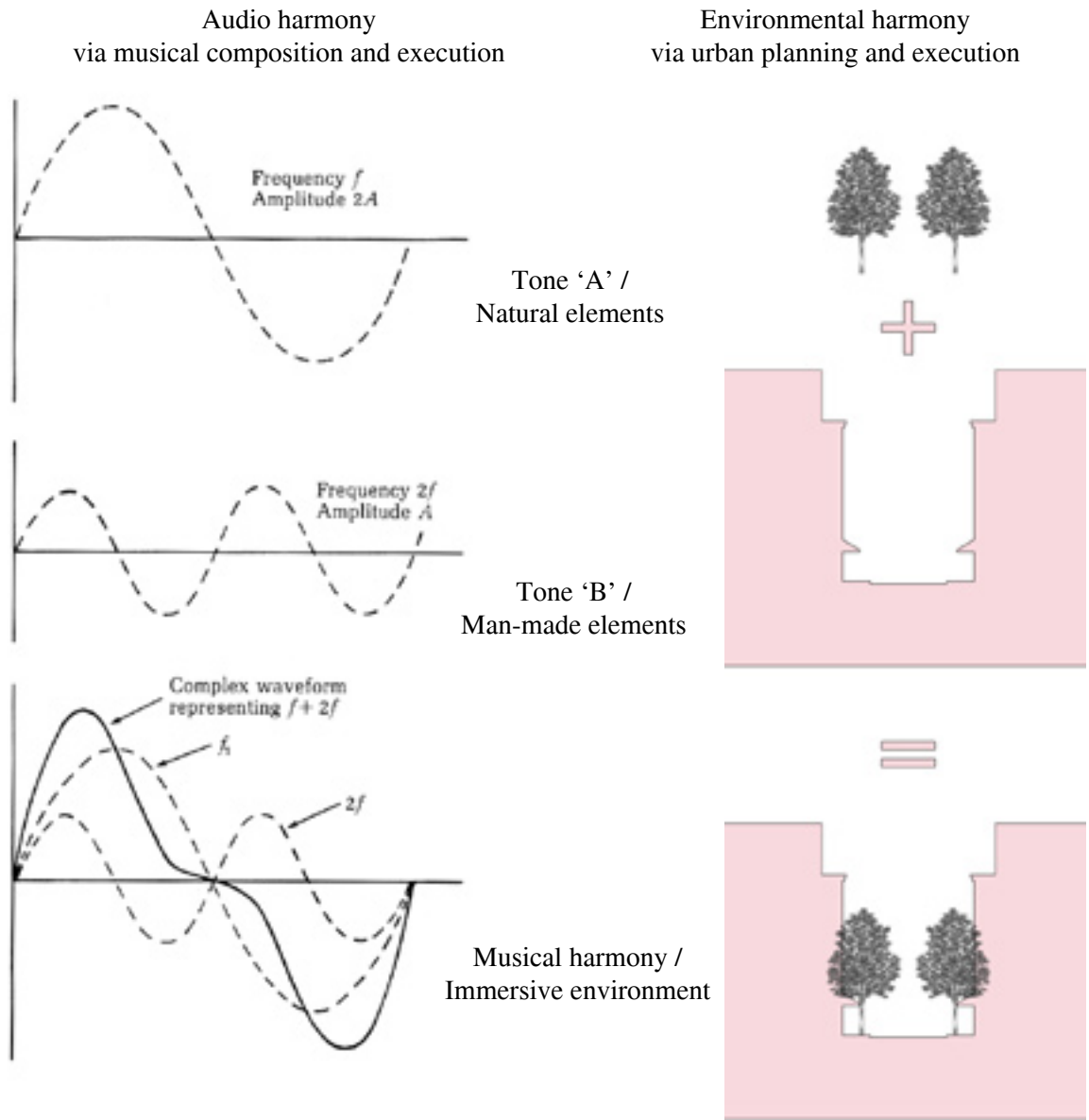


Figure 1.21: Forest Hills Gardens, Queens NY  
Symbiotic relationship of rural and urban elements, tree and wall.



Figure 1.22: New York, NY  
Symbiotic relationship of urban and rural elements in a highly urbanized environment.

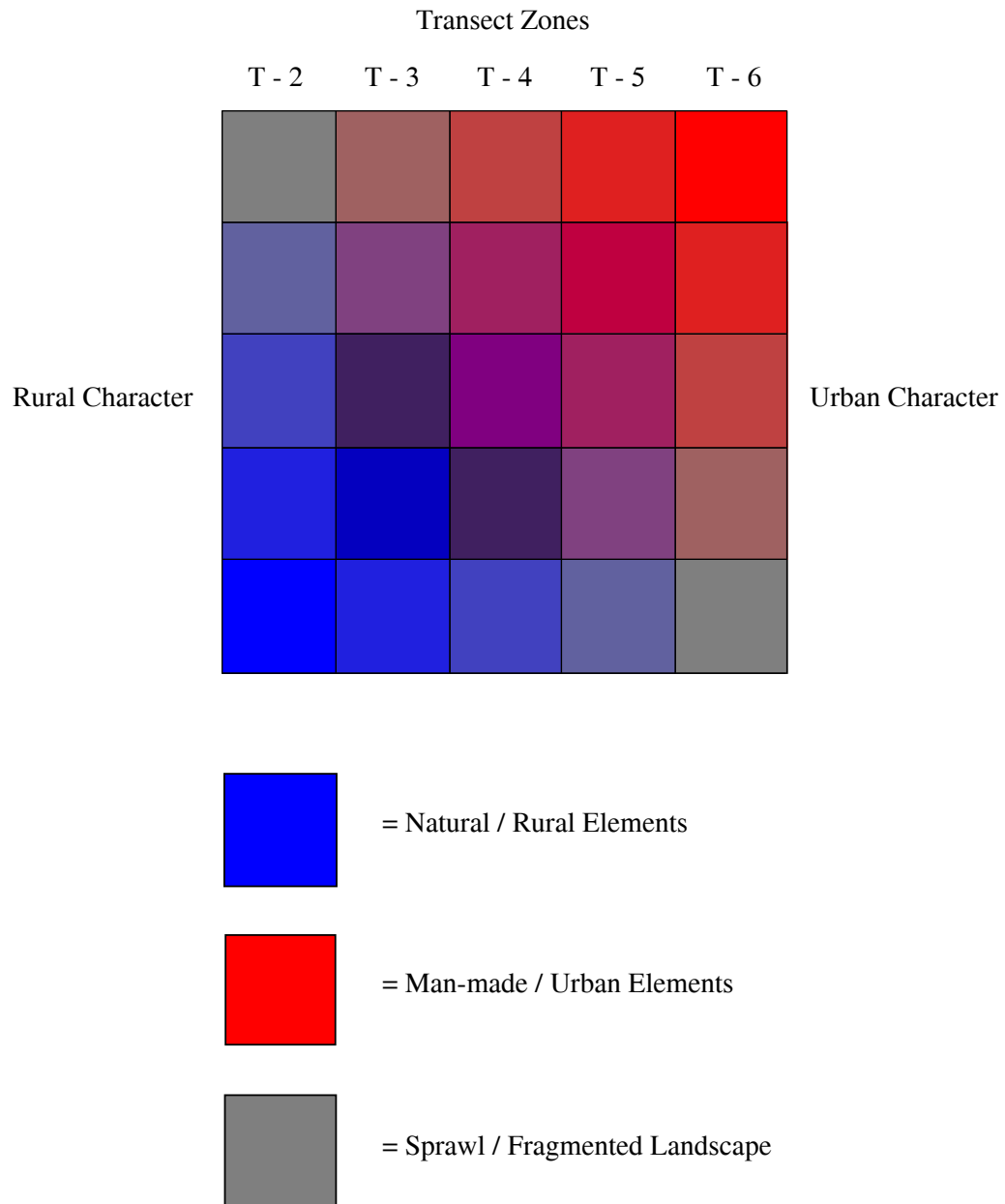
Figure 1.23: Musical equivalent of Immersivity



Environments can be immersive regardless of their degree of urbanization, as demonstrated below:



Figure 1.24: Color equivalent of Immersivity



The theory of Immersivity as illustrated through color mixing squares.

Figure 1.25: Primary/ Secondary color mixing square

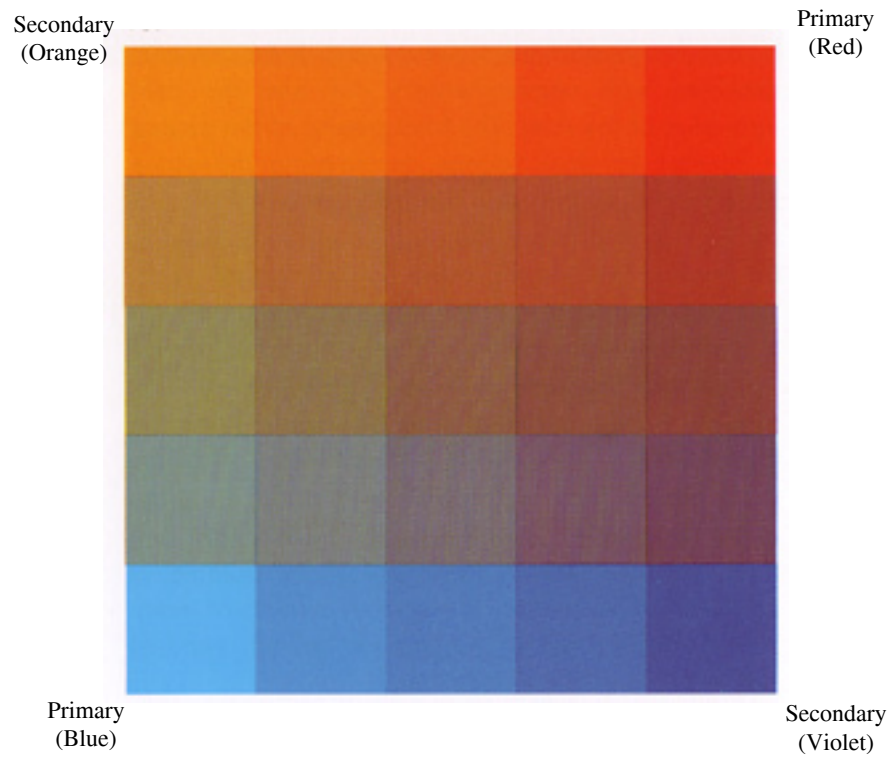


Figure 1.26: Gradient/ Saturation color mixing square

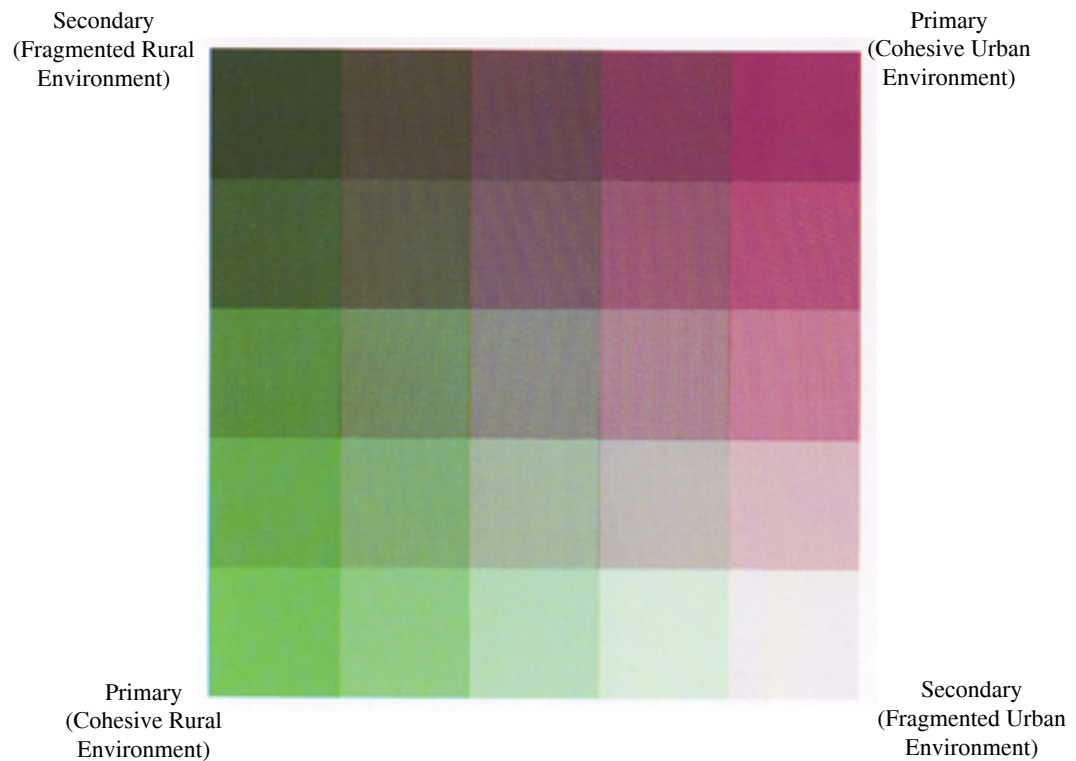


Figure 1.27: Cartesian transect diagram

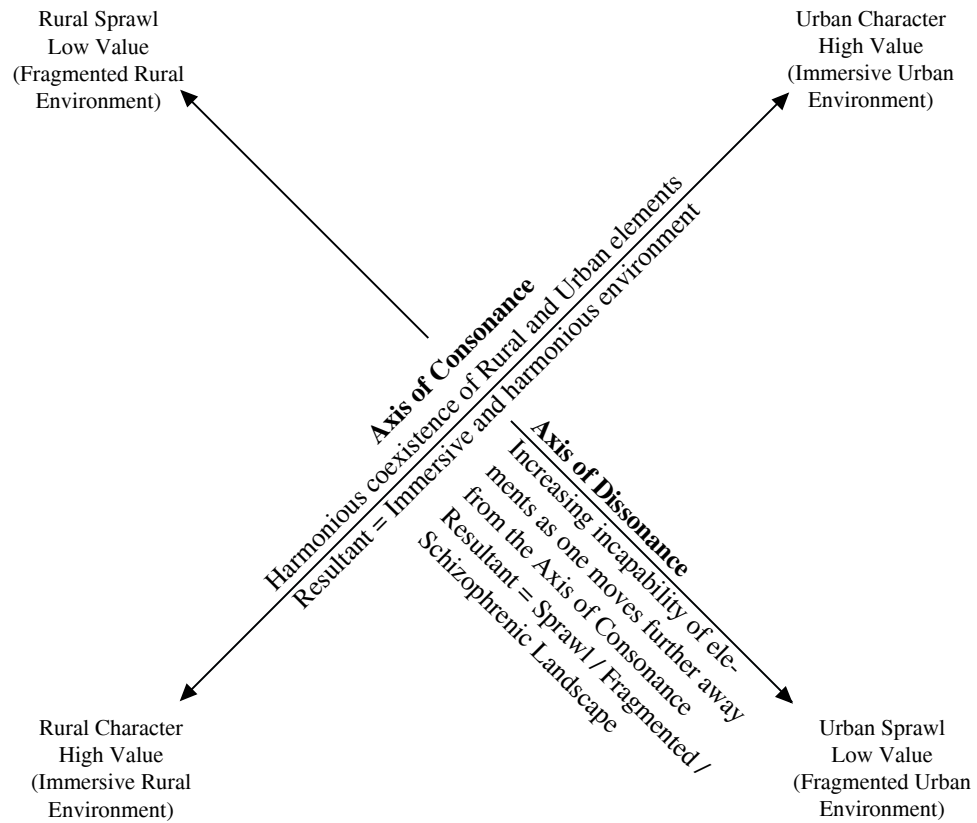


Figure 1.28: Cartesian Transect diagram: Relation to the theory of Immersivity

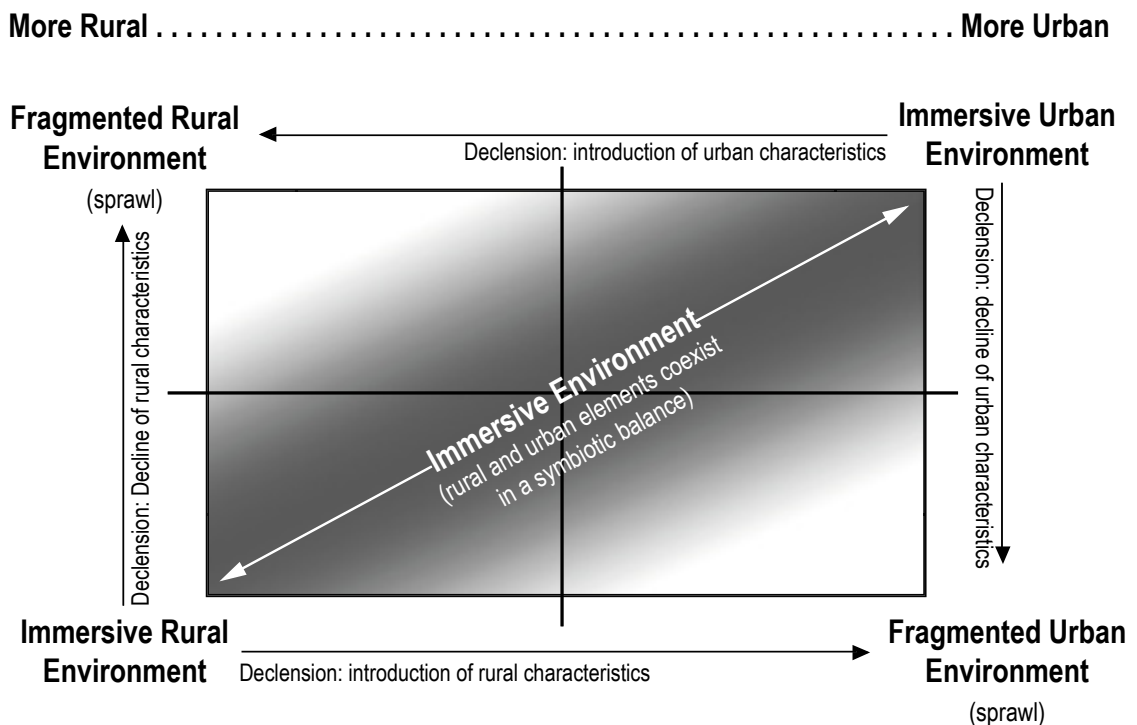




Figure 1.29: Linear Transect

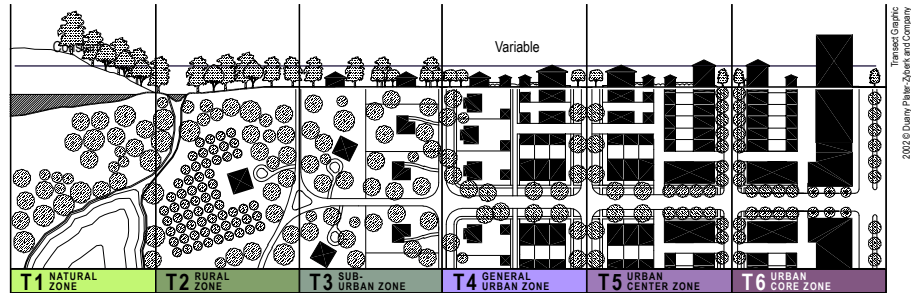


Figure 1.30: Transect comparison diagram

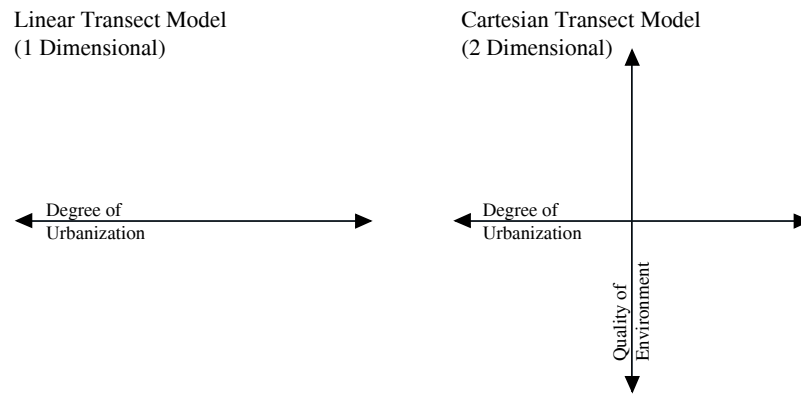


Figure 1.31: Cartesian Transect: basis for assessing Immesivity values

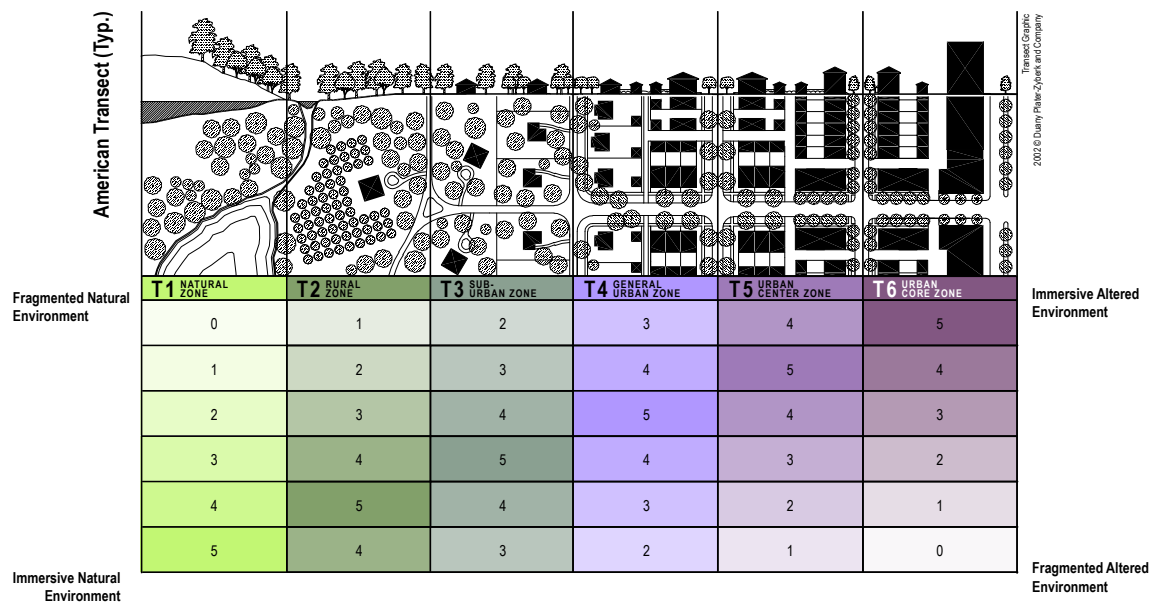


Figure 1.32: Environmental Immersivity Diagram: Cartesian Transect

Method for evaluating the degree of immersiveness of a given environment, and subsequently its value, for both proposed and existing developments. Unlike the methods used by conventional zoning, this method assesses developments based on a common set of factors that accurately describe the physical environment from which they are derived.

**American Transect (Typ.)**  
**Environmental Immersivity Value (EIV): 5**

Note: All T-zones shown in this transect diagram have an EIV of '5' because they each represent the highest degree of environmental cohesion. Most existing areas however, will display T-zones that have a range of EIVs.

Transect Graphic  
 2002 © Duany Plater-Zyberk and Company



**Immersive Natural Environment**

**Immersive Altered Environment**

**Immersive Natural Environment**

**Fragmented Altered Environment**

Urban elements assimilate to the rural condition, consistency of rural and urban element relationships and methods of integration

Transition area, assimilation of elements occurs on a circumstantial basis, increased variation and complexity of relationships and methods of integration

Rural elements assimilate to the urban condition, consistency of urban and rural relationships and methods of integration

Figure 1.33: Environmental Immersivity Diagram: Cartesian Transect and Environmental Indicators

**Immersivity:** The degree of environmental cohesion in a given area

**Environmental Immersivity Value (EIV)**  
**Definition by example:**

Regardless of scale, degree of urbanism, density, bulk, usage, or style, every environment can be organized according to its degree of immersiveness. For example, the EIV of downtown Manhattan is equal to that of Charleston, which is equal to San Francisco, Annapolis and Alexandria. Although their scale, degree of urbanism [T-6 (Downtown Manhattan, San Francisco) and T-5/ T-4 (Charleston, Annapolis and Alexandria)], density, bulk, usage, and style are different, each embodies the characteristics of an immersive environment.

**The Environmental Immersiveness Value (EIV) of a given area is calculated by using two predominant factors at three different scales:**

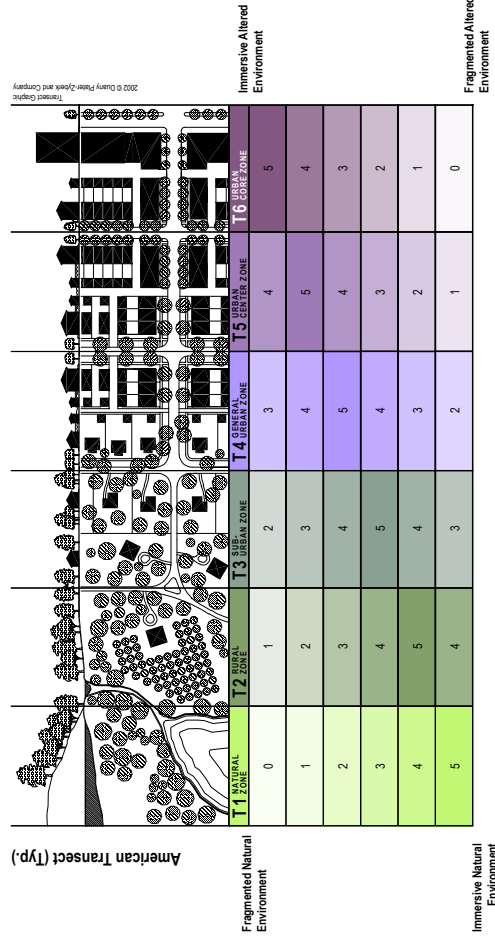
### 1. Degree of Cohesion

- *Micro scale:* environmental cohesion within a single T-zone

### 2. Degree of Correlation

- *Semi-macro scale:* degree of purposeful integration between various T-zones

- *Macro scale:* degree of integration of the entire development/ site and its surrounding immediate and regional context



**Variable:** The arrangement of tangible components that make up a given physical environment (i.e. design)

**Hypothesis:** The degree of social, economic and environmental benefit inherent in a given standard real estate product varies directly, but not necessarily proportionately, to the relative declension of its Environmental Immersivity Value (EIV). (i.e. The higher the EIV of a neighborhood, the higher the standard of living, and subsequently the higher the value per acre, sq.ft., etc...)

Environmental Immersivity Value (EIV):	Valuation: (resulting conditions)			Determining Factors of Environmental Immersivity: (applicable at three analytical scales: Micro, Semi-Micro, and Macro)			Density (multiple methods will be used)			Continuity (of developed land, excluding natural resources and their degree of permeability)			Nuclearity/ Grain			Compactness		
	Environmental Immersivity Value	Social Benefits	Economic Benefits	Environmental Benefits	Diversity of - Uses - Housing Types	Integration of - Uses - Housing Types	Aesthetic Continuity (public and nonpublic)	Intensity of Activity	Frequency of Activity	Ability for Evolutionary Change	Sense of Place/Community (definition of street scenes and their degree of permeability)	"Density" (multiple methods will be used)	Continuity (of developed land, excluding natural resources and their degree of permeability)	Concentration	Nuclearity/Grain	Compactness		
5 - Immersive Environment (symbolic balance between rural and urban characteristics, the degree of each as relative to the ratio of a specific transect zone)	High	High	High	High	Heterogeneous	Integrated	High	Intense	Constant	Infinite/Dynamic	Strong	High	High	High	Fine/Polynuclear	Highly Compact		
4 -																		
3 - Cohesive Environment																		
2 -																		
1 -																		
0 - Fragmented Environment (the unbalanced relationship between rural and urban characteristics)	Low	Low	Low	Low	Homogeneous	Segregated	Low	Moderate	Inconsistent	Limited/Static	Weak	Low	Low	Low	Coarse/Mononuclear	Dispersed		

Figure 1.34: Immersive Environment Chart

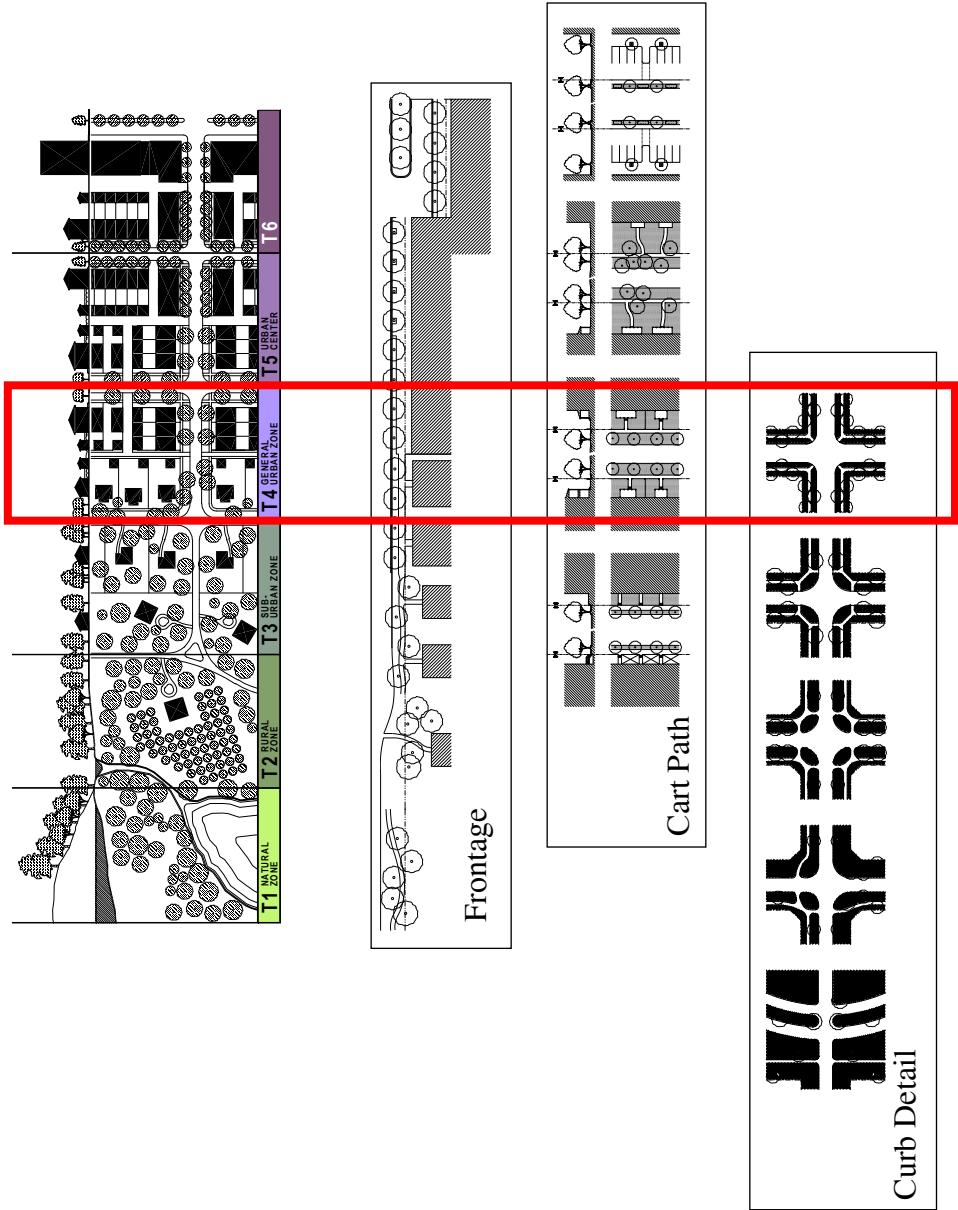


Figure 1.35: Non-Immersive Environment Chart



Figure 1.36: Mutation of typology and resulting decline in urban environmental quality:

The Rowhouse:



Annapolis Rowhouses (Original type)



Annapolis Townhouses (Mutated typology and environment)

Both above images were taken in Annapolis, MD only 2 miles apart, both depict inherently the same building typology, yet the rowhouses on the left command prices that are 3 to 4 times as much as those on the right. Why? The units on the right are newer, have obvious parking and appear to be larger? Such is the result when typologies are copied without fully understanding all invariant characteristics and environmental intricacies.

The Manor House:



Traditional manor house, Ellicott City, MD (Original type)



Modern single family house, Ashburn Farm, VA (Mutated typology and environment)

### **1.7 On a unified environment:**

This brings us to Charles Darwin and his theory of evolution and of natural selection. This same framework can also apply to the altered environment as well as the natural one, as there is only One environment. The Earth is a seamless continuum of environments, from the most wild of places to the most altered of places, there exists a seamless spatial continuum. Within this spectrum there exists an entire range of not only degrees of ruralism to urbanism and everything in between (see Transect), but there is also a range of quality of each degree of urban or rural environment. The health of a “natural” environment can be objectively measured (to at least the degree which we know how to measure it) as too can the “health” of an altered environment be measured. Just as in the study of color, the saturation or quality of a color is the deviance from the purity of that color. This same phenomenon can also be found in music (Fourier’s theorem) which states that when two tones with frequencies of integral multiples (harmonics) are combined to create a more complex, yet still harmonious sound. This same theory can be applied to the altered environment which is comprised of some combination of natural and man-made elements. Their arrangement and integration can be classified in differing degrees of harmony. (See diagram X)

Although there is only one continuous environment, and although humans have a tendency to stratify and fragment this in order to better understand it, for the purposes of this study I will differentiate between the natural and altered environment in order for the clarity of the arguments. Although all environments are invariably effected by elements outside of their immediate context (the impact man can still be felt in natural environments, i.e. it has been shown that fluorocarbons released into the atmosphere effect the climatic conditions on the other side of the globe as ozone levels are depleted...)

Natural environments will be defined as those areas, or regions that have not been physically altered by the hand of man. Altered environments are those areas or regions that have been physically altered by the hand of man. Following this definition, there are few places in the western world, especially in the United States, which could be classified as being “natural”.



Figure 1.37: *One world, One environment.*



**Clarification of the common fallacy that the rural landscape is natural:**

When explorers first came upon the Chesapeake Bay over four centuries ago it was said that water visibility was over 40 feet. Today however this has been drastically reduced to only a few feet. This has also been looked at objectively by tracking the declining population of species (oysters, rockfish, etc...) over time. This is all objective evidence that we are rapidly altering our environment. I think that it would be foolish for anyone to argue that it is morally debatable as to whether altering the environment is “good” or “bad.”

Thus, if one agrees that altering the environment in a way in which contributes to its demise is “bad,” and municipalities genuinely desire to do “good,” (as shown in their statements of purposes and intent in their zoning ordinances), why then do we continue to alter our landscape in ways we did not intend?

I believe that much of this is because we do not know how to objectively measure the quality of the altered environment as effectively as we do in evaluating the health of the natural environment. Since this is the very fold which all humans live and coupled with the fact the that the world’s population is growing at an exponential rate, in order to create and maintain higher



quality environments, we must first learn how to objectively quantify them in order to achieve the results that which we desire.

This postulation becomes increasingly complex in a setting such as the United States in which we are the “wealthiest” nation in the world and have the “highest standard of living in the world,” so why then should we devote any effort in this area of study? In order to do “good,” we must first convince those who wish to do “well” that they can do both at the same time. The question then becomes: how is this achieved in a day-in-age where quantity supersedes quality. As Andres Duany once said, “In the past Americans may have been poor, but they were smart. Today Americans are rich and stupid.” This phenomenon is echoed in the environments that each created.

### **1.8 Application of value to real estate:**

I would argue that the current method of analyzing real estate is flawed when it comes to assessing anything beyond that which is tangible (at least in the sense to that which is really perceived). This assessment is obvious, straightforward and simple. Form follows function, contemporary society does not understand the connection, this is why many people move through the environment yet never question its design or organization, merely accept its physical form.

Even some abstract principles such as proximity to amenity as it relates to value can be assessed, however when it comes to the “quality” and character (that which is perceived to be merely a ‘cute’ aesthetic) One does not make the cognitive connection between aesthetic and function. Often times, new towns such as Kentlands are criticized as seeming “fake” and “cute, but I wouldn’t want to live there” type mentality. This is due to an unfamiliarity and lack of understanding of the functional aspects of the aesthetic, not the aesthetic itself. These observations, rather reactions/ baseless critiques, are merely skin deep as they do not see the functional “beauty” of their composition. It is in this, the tangible aspects of the function of the design which can in fact be quantitatively analyzed and related to that environments respective

“quality” and the resulting quality of life.

### **Branding, “Brandscaping,” Image and Identity in Advertising:**

As a society we are becoming increasingly critical and accustomed to aesthetics. This can be seen in the ever increasing proliferation of advertising. Even advertising is now being honed as a science. This also stems such trends as ‘sex and advertising,’ which in and of itself is a double sense of aesthetic appeal (1. sexy is advertising in the biological sense 2. the advertisement itself is advertising in an economic sense)

Even companies are now realizing the advantages of branding, and with it the creation of identity. Recently, as a society we have lacked the creation of physical identities and have created an abstract one. Consumerism, the internet, television... One fails to understand the value in the creation of identity and image of place. The archaic ideas of this can be seen in the attempts made by builders to sell their product. (image of gazebo, signs, signs, cliché houses with the fake picket fence...) It is because of things like this that give movements like the New Urbanism a bad wrap because the principles of it are misunderstood and ill applied in order to present a false façade just to sell a product (used for greed). They know what they want, they just don’t know how to get it.

A common counter argument is that such building practices are more expensive. This is an outright fallacy. Cost in development is irrelevant. What does matter is profit. Certain forms of design may cost more or less initially, yet it is the profit and rate and reliance of return that interests investors and developers. If these principles are designed into a project from its inception it is just slightly more expensive. By doing this early, one can calculate finances more accurately. I do not propose that this is easy, due primarily because of the fact that the housing (development in general, I hesitate to give-in to popular terminology because development should be diverse rather than homogenized as it leads to more flexibility, choice and ultimately a higher quality of life) market has become so specialized and streamlined along a single course of action that it is like derailing a locomotive at this point to shift the market’s processes to creating better

environments because they have become so efficient at destroying it.

Figure 1.38: Value and Urban Evolution

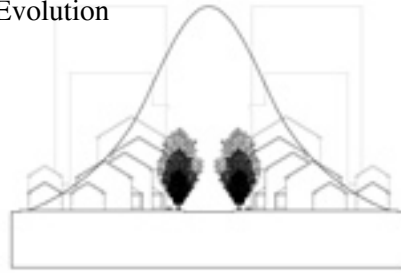


Figure 1.39: Economic Breakdown / Composition of Value:

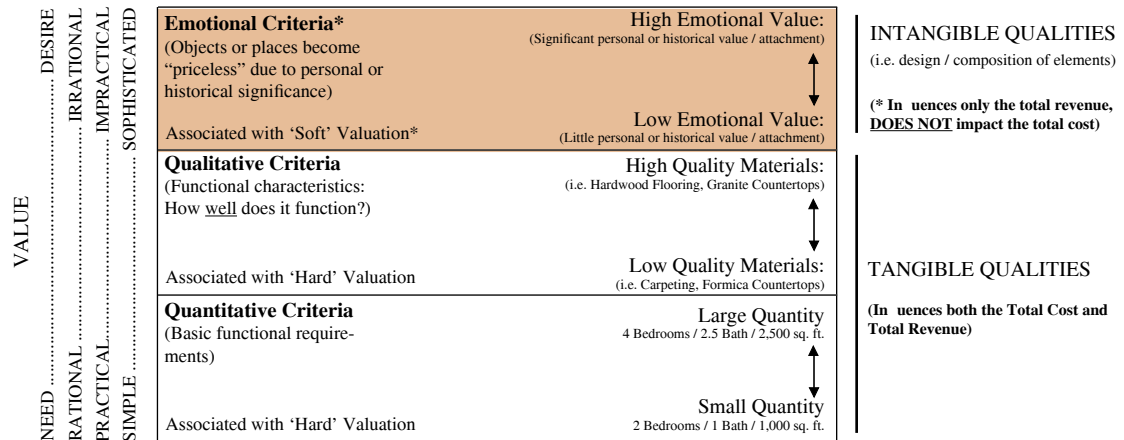


Figure 1.40: Valuation and Profit Maximization Theory: Total Cost - Total Revenue Method

**Diagram** (Just as there are "hard" and "soft" costs in development, there are also inherently "hard" and "soft" revenue streams. The full potential of these revenue producing vehicles is currently misunderstood and subsequently absent in conventional development financing models.)

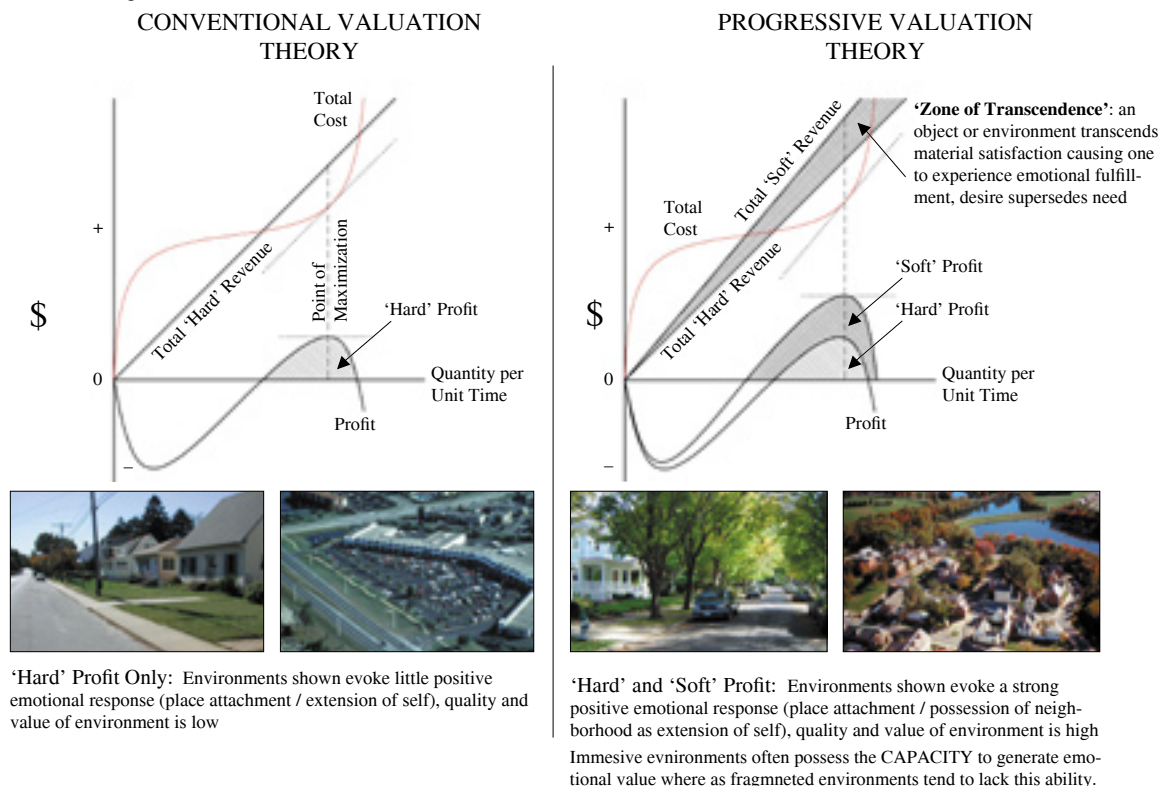
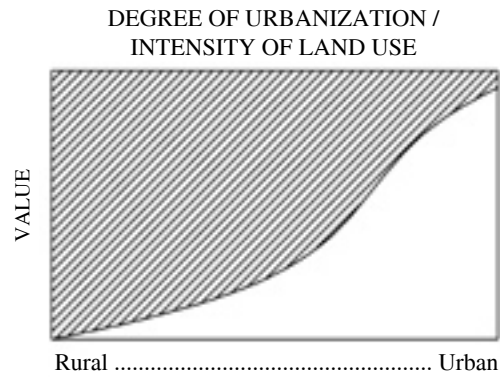
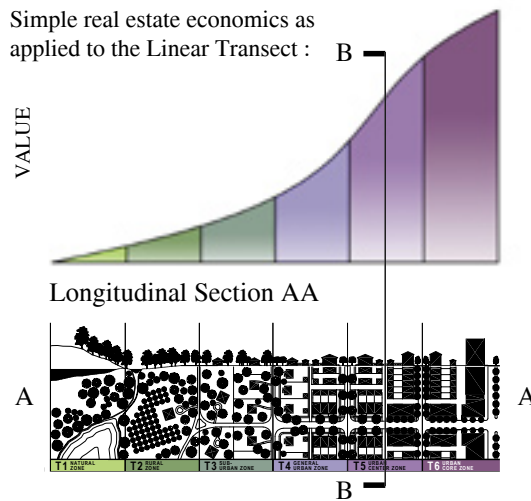


Figure 1.41: Value and the Transect

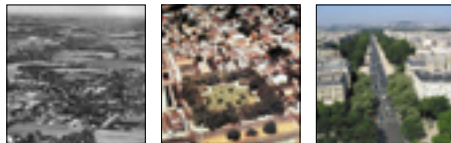
Simple real estate economics:



Simple real estate economics as  
applied to the Linear Transect :

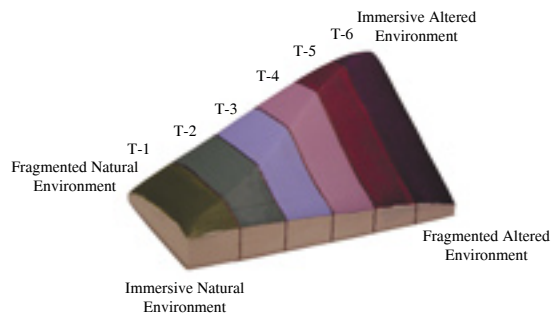


Immersive Environments:

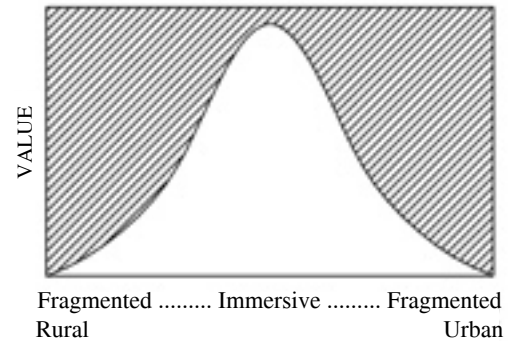


Rural ..... Urban

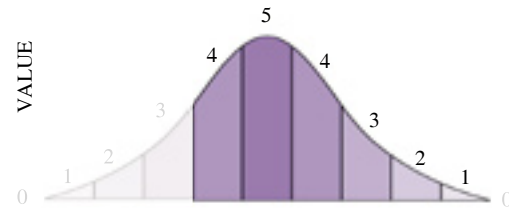
3-D Composite Value Diagram (Urbanization and  
Immersivity graphed on a two-way curve): Highest  
degree of environmental health and economic value is  
located along the ridgeline.



IMMERSIVITY / QUALITY OF  
ENVIRONMENT

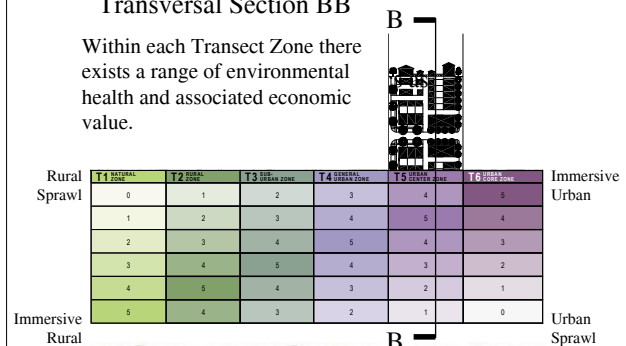


Sophisticated real estate economics as  
applied to the Cartesian Transect :



Transversal Section BB

Within each Transect Zone there  
exists a range of environmental  
health and associated economic  
value.



Jerrold, Walter, editor. The Big Book of Fairy Tales.  
Charles Robinson, illustrator. London: Blackie & Son,  
[1911].

Too Hot ..... Just Right ..... Too Cold

T-4 / T-5 Zone:



Fragmented ..... Immersive ..... Fragmented Rural Urban

## CHAPTER 2

### METHODOLOGY

#### 2.1 Bridging the Gap

This study sought to act as a bridge between qualitative environments and quantitative analysis, the subjective experience and objective analysis, descriptive observation and prescriptive application, humanist intentions/ desires and rationalist calculations... in an effort to produce better environments in which to live, work, and play. It also attempted to analyze the different processes that lead to these different results (i.e. 2-d “abstract” approaches or “at” zoning leads to abstract and dehumanized landscapes where as sophisticated 3 and 4 dimensional zoning results in complex and engaging environments).

Comparison of graphic representation:

Plan:

- Informative/ rationalist: zoning
- Illustrative

Renderings of how it will really be experienced:

- Aerial overview
- Street perspectives

Sense of Place = (related to/ reflective of) Value

The governing laws of creation (zoning ordinances) should reflect they way in which one experiences the resultant. Thus methods of assessment need to be devised that accurately reflect the urban experience.

**Zoning ordinances as written documents** = 1 dimensional document (abstraction of place through words)

**Simple graphic zoning ordinances** = 2 dimensional documents (plans, sections and the written word)

**Sophisticated graphic ordinances** = 3 and 4 dimensional documents (volumetric diagrams, *evolutionary zoning*, plans, sections and the written word).

## **2.2 Evolutionary Zoning:**

There are two fundamental issues when conceiving of a zoning ordinance:

1. regulations for a particular point in time (new development), and
2. regulations for cohesive transformation and urban evolution over time (changes to an existing development).

The majority of zoning ordinances currently in use fail to adequately address evolutionary tendencies. Many often fail to get the types of development that they believe they are specifying because their language is not explicit enough.

One must not prohibit evolution in planning. When we do, or simply do not foresee future conditions, it invariably leads to fragmented growth. One must lace plans with the genetic material in order to foster evolution in a seamless and immersive fashion.

Current methods of property assessment fail to acknowledge the future potential of a property. Assessment is mainly based on the current tangible condition of a property rather than what it can evolve into (i.e. as street trees mature they add value).

The transect is an engine for generating value, if followed precisely vast values will be created and will grow as the area evolves.

“Growth is inevitable, it is the pattern of growth that is variable.” In CSD evolution and urbanization usually carries a negative connotation because such growth is so disruptive and fragmented. With growth in CSD values can either go up or down depending on the allocation and arrangement of these “new species.” In natural growth and TND’s growth means increased valuation because evolution occurs in incremental stages in which these “new species” can be seamlessly absorbed into the existing fabric, continually maintaining cohesive and immersive environment

### 2.3 Arrangement and Allocation of Elements:

Urbanism is the composition of elements arranged to define a network of events. The misallocation of elements leads to devaluation. Statistically CSD is correct, yet its elements need to be assembled correctly. This study has attempted to acknowledge this fact and utilize it as a constant throughout the experiment. The program of the site remains constant yet the allocation of these elements varies according to differing design philosophies.

The following diagrams represent an initial attempt to quantify experiential phenomena regarding the urban experience:

Figure 2.01: Economic value as it relates to urban evolution

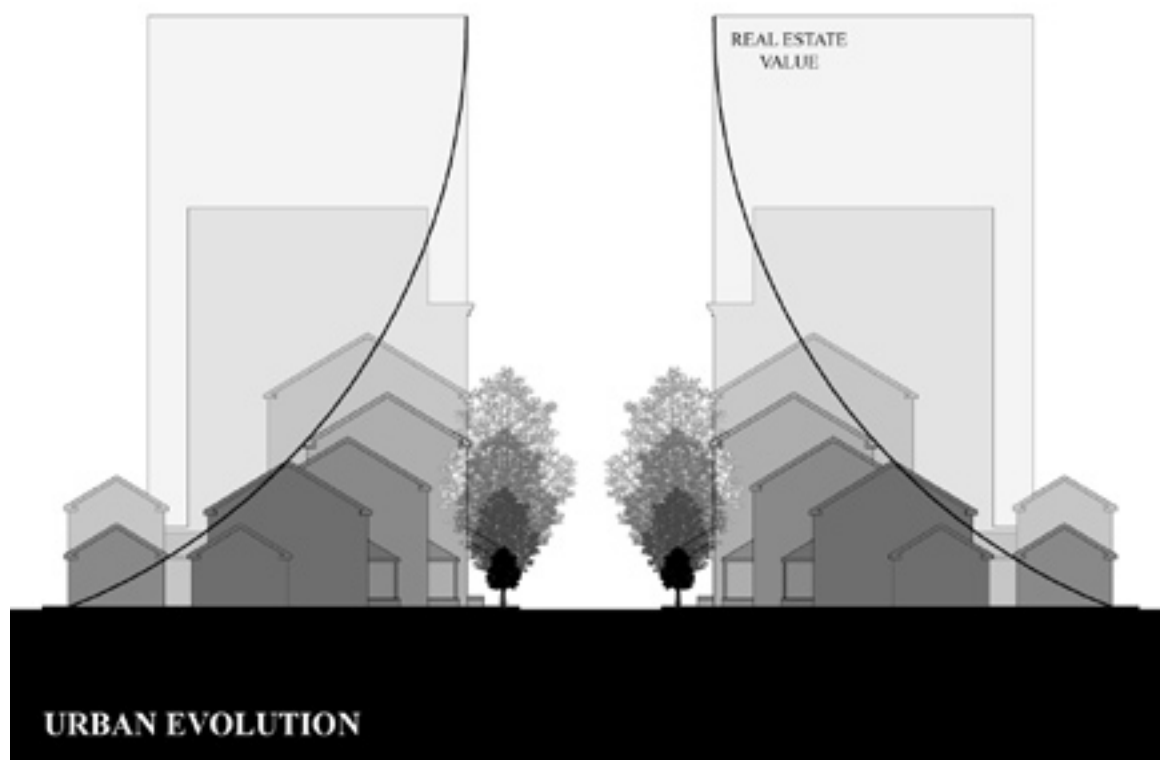




Figure 2.02: Allocation of elements

Diagrammatic example of an Immersive “environment”, all elements are arranged in a cohesive and recognizable manner



Diagrammatic example of a schizophrenic “environment”, elements are arranged in a haphazard and fragmented manner, overall organization is either non-existent or unrecognizable

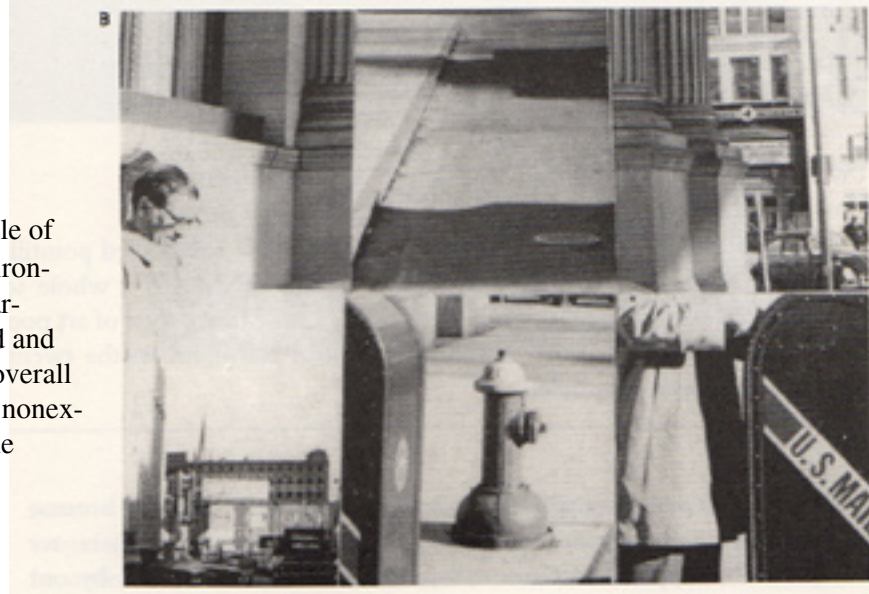


Figure 2.03: Sense of place diagram: plan base

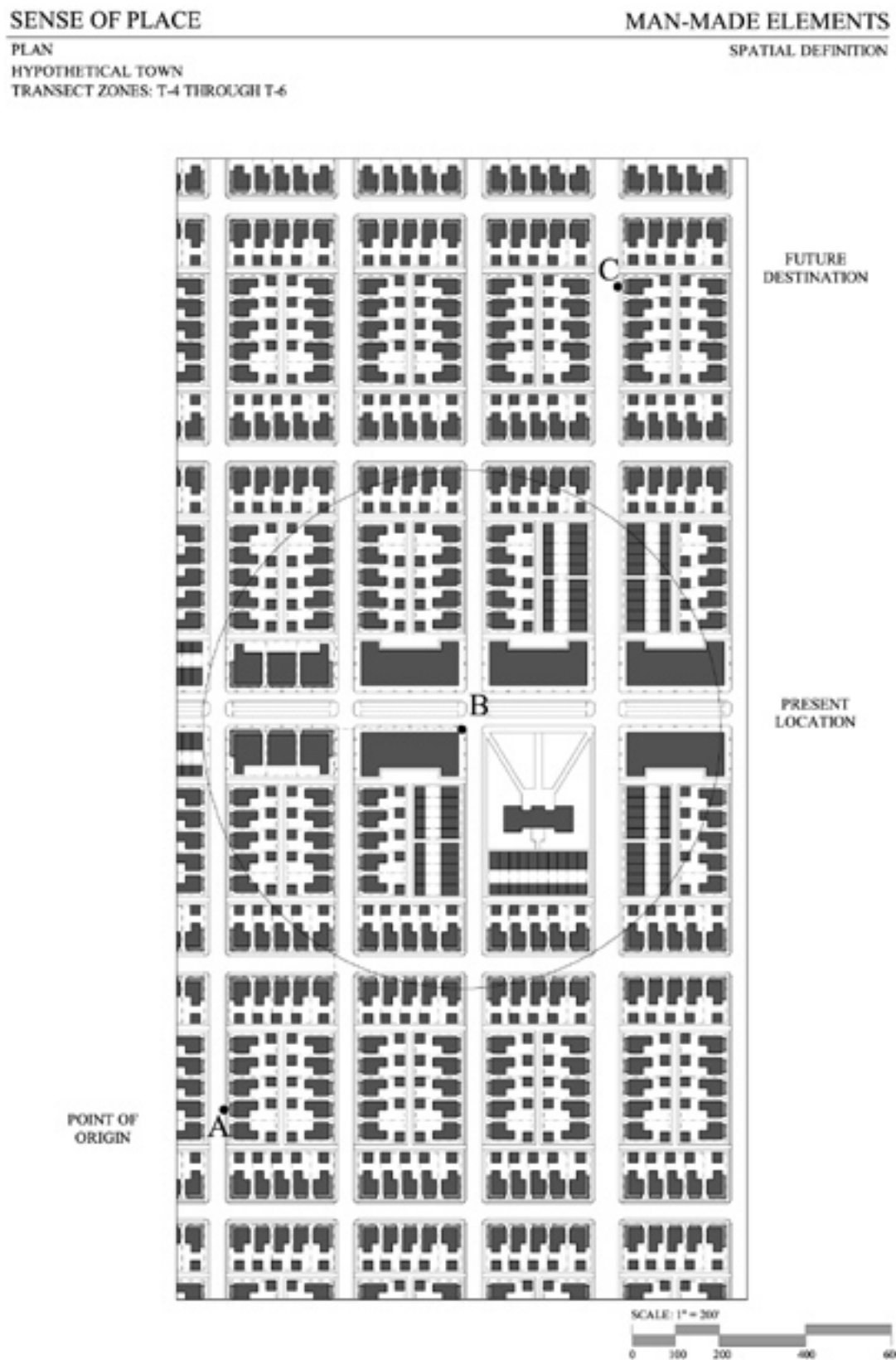


Figure 2.04: Sense of place diagram: plan base

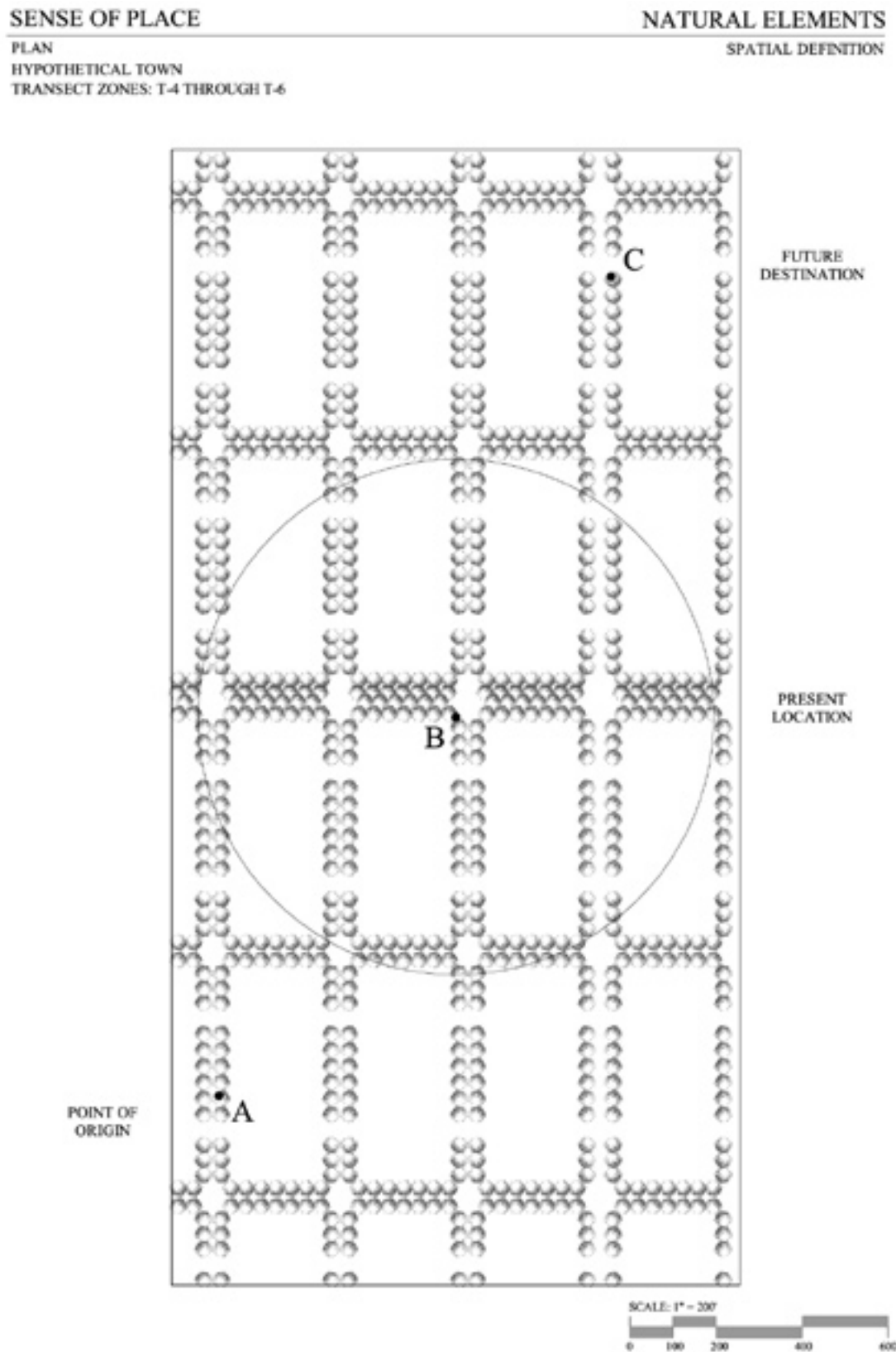


Figure 2.05: Sense of place diagram: plan base

# SENSE OF PLACE

# NATURAL & MAN-MADE ELEMENTS

PLAN

SPATIAL DEFINITION

HYPOTHETICAL TOWN

TRANSECT ZONES: T-4 THROUGH T-6

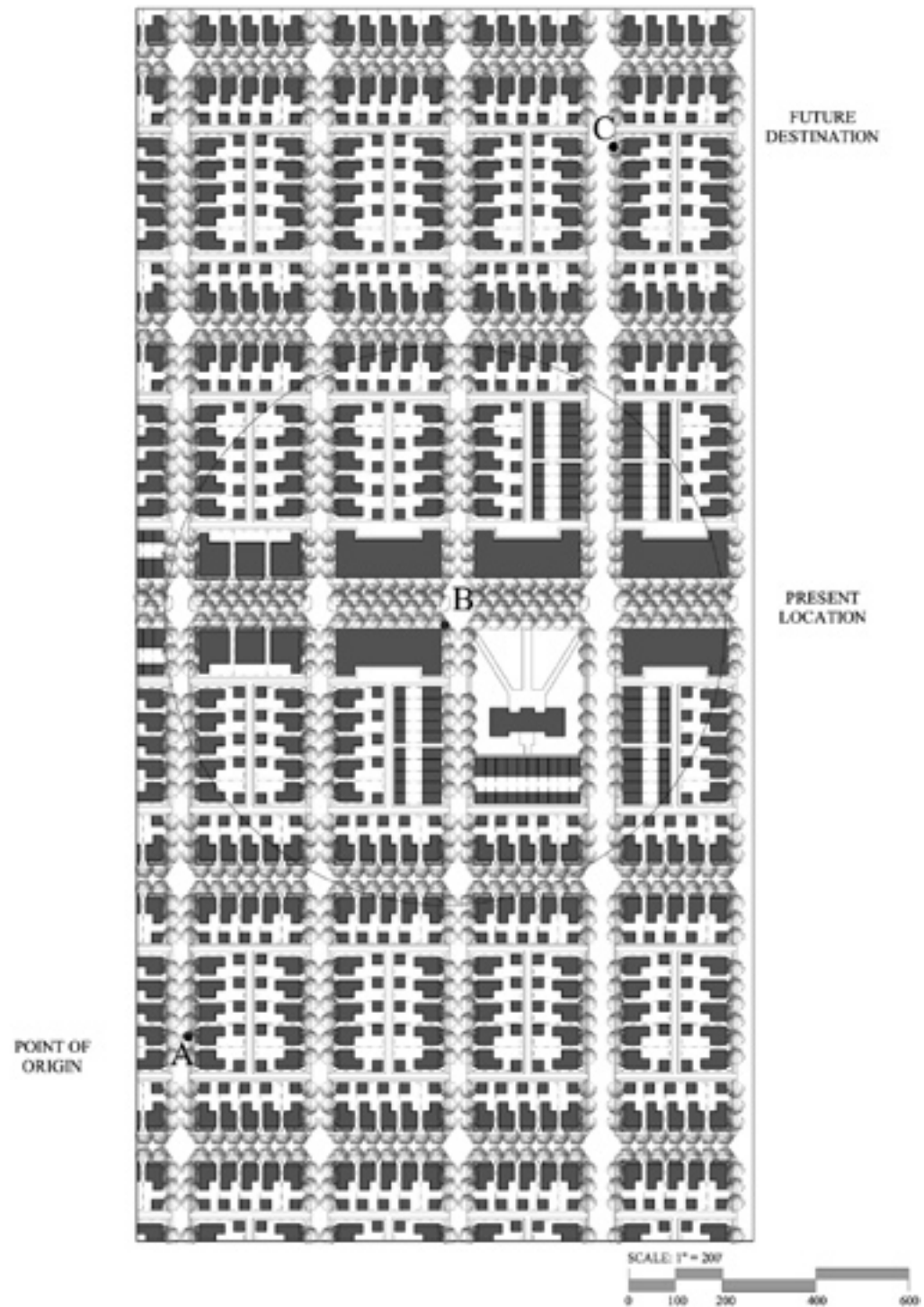


Figure 2.06: Sense of place diagram: man made elements

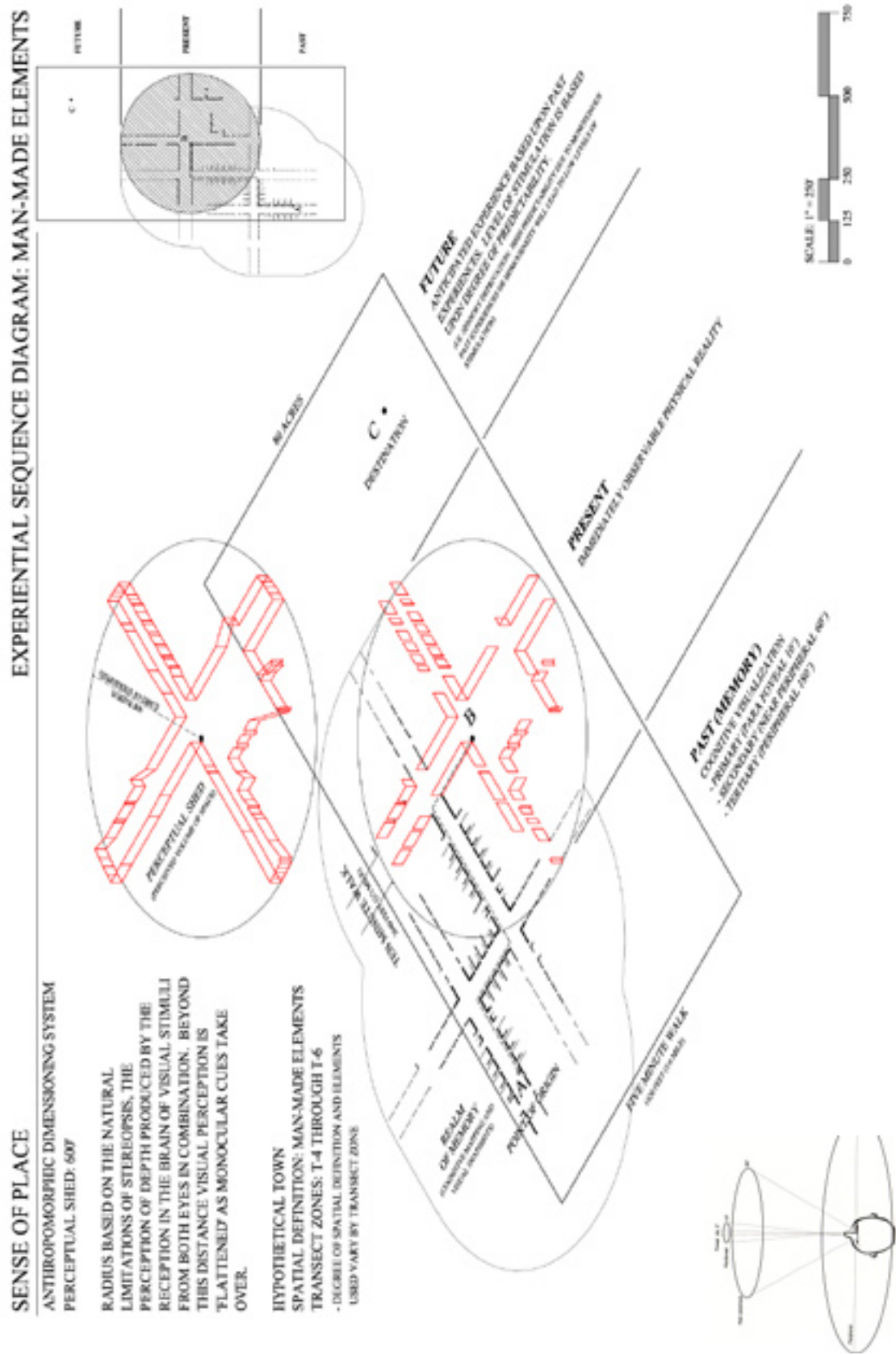


Figure 2.07: Sense of place diagram: natural elements

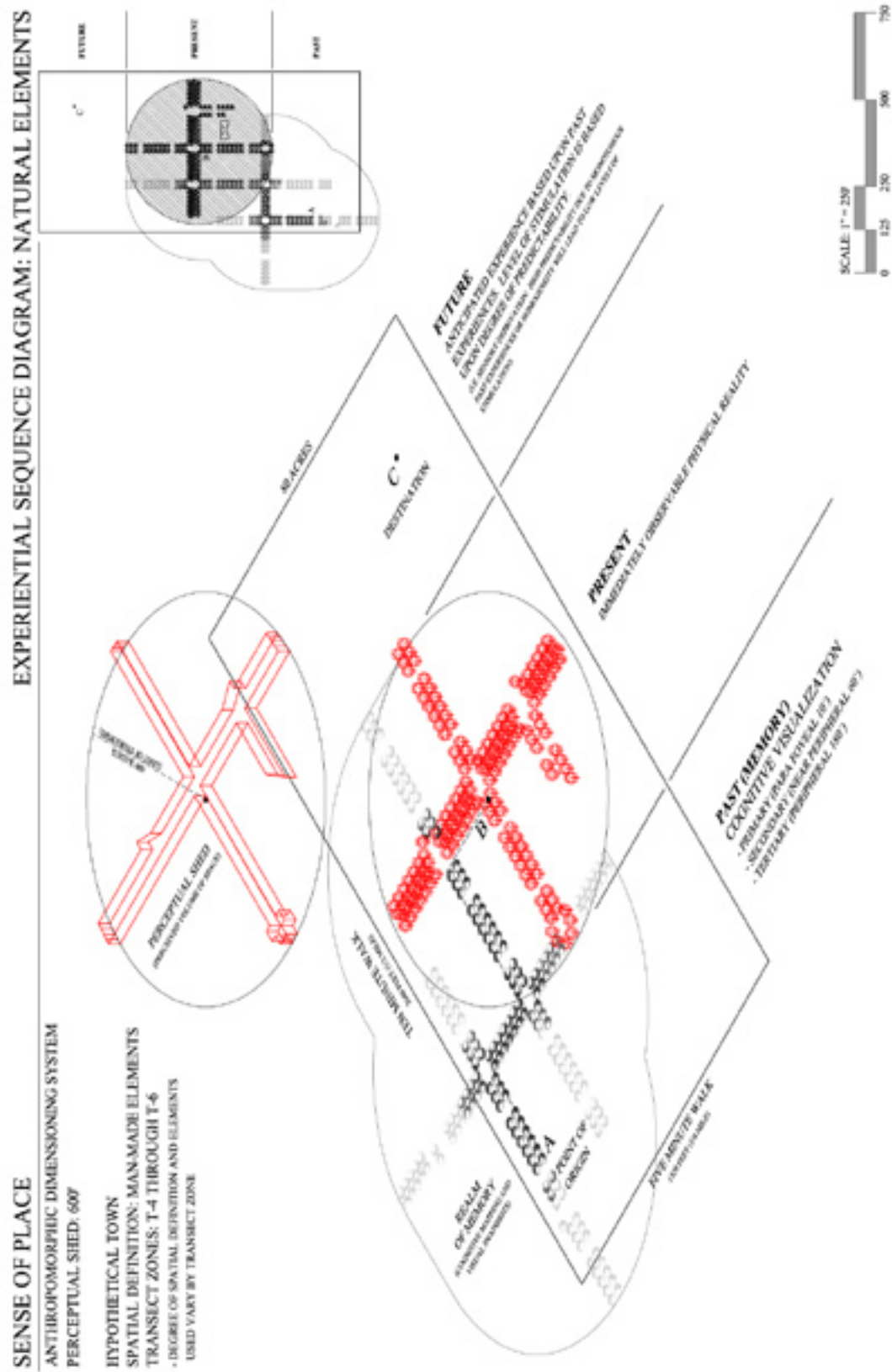




Figure 2.08: Sense of place diagram: consistent height and massing

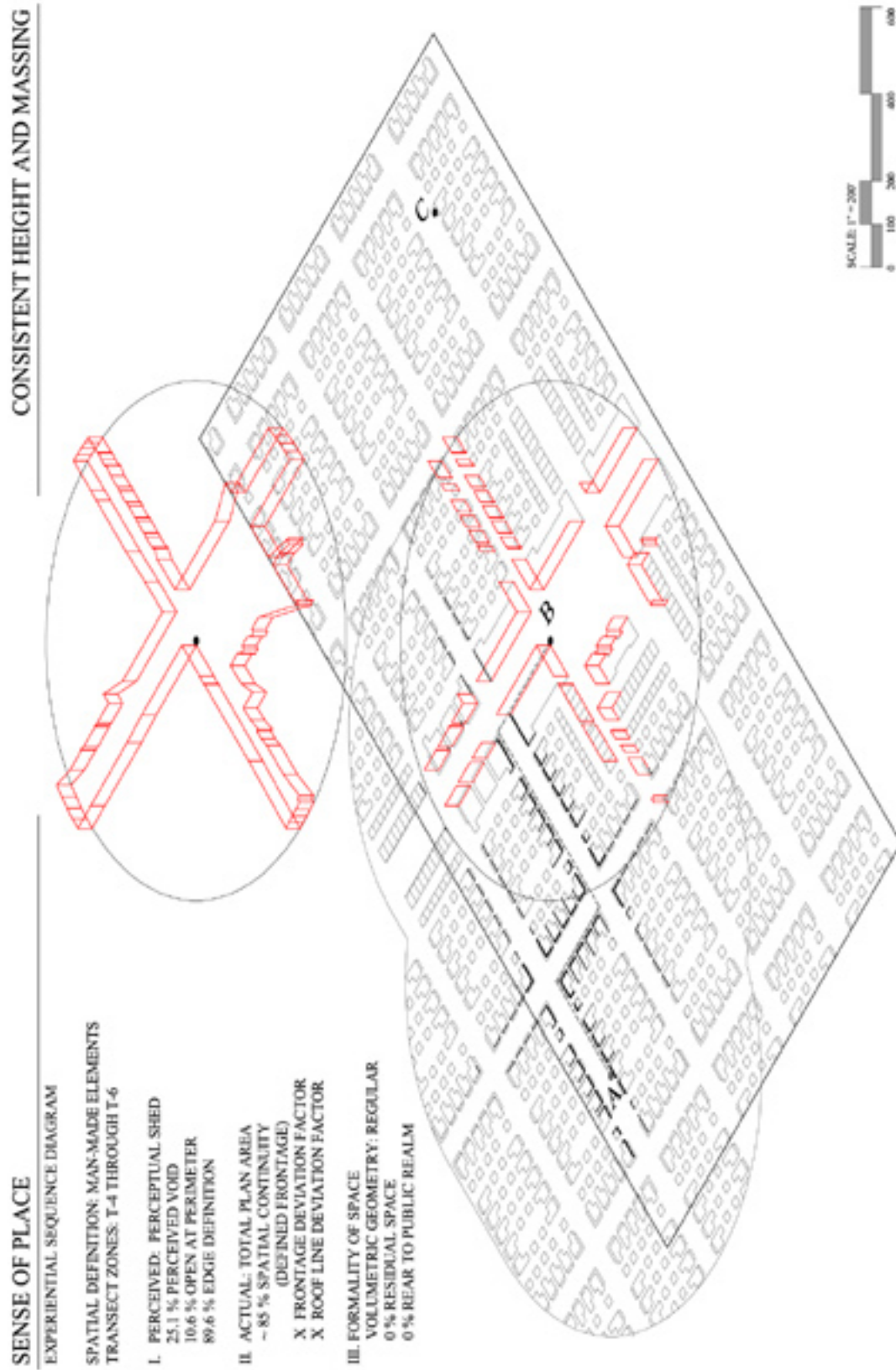


Figure 2.09: Sense of place diagram: varied height and massing

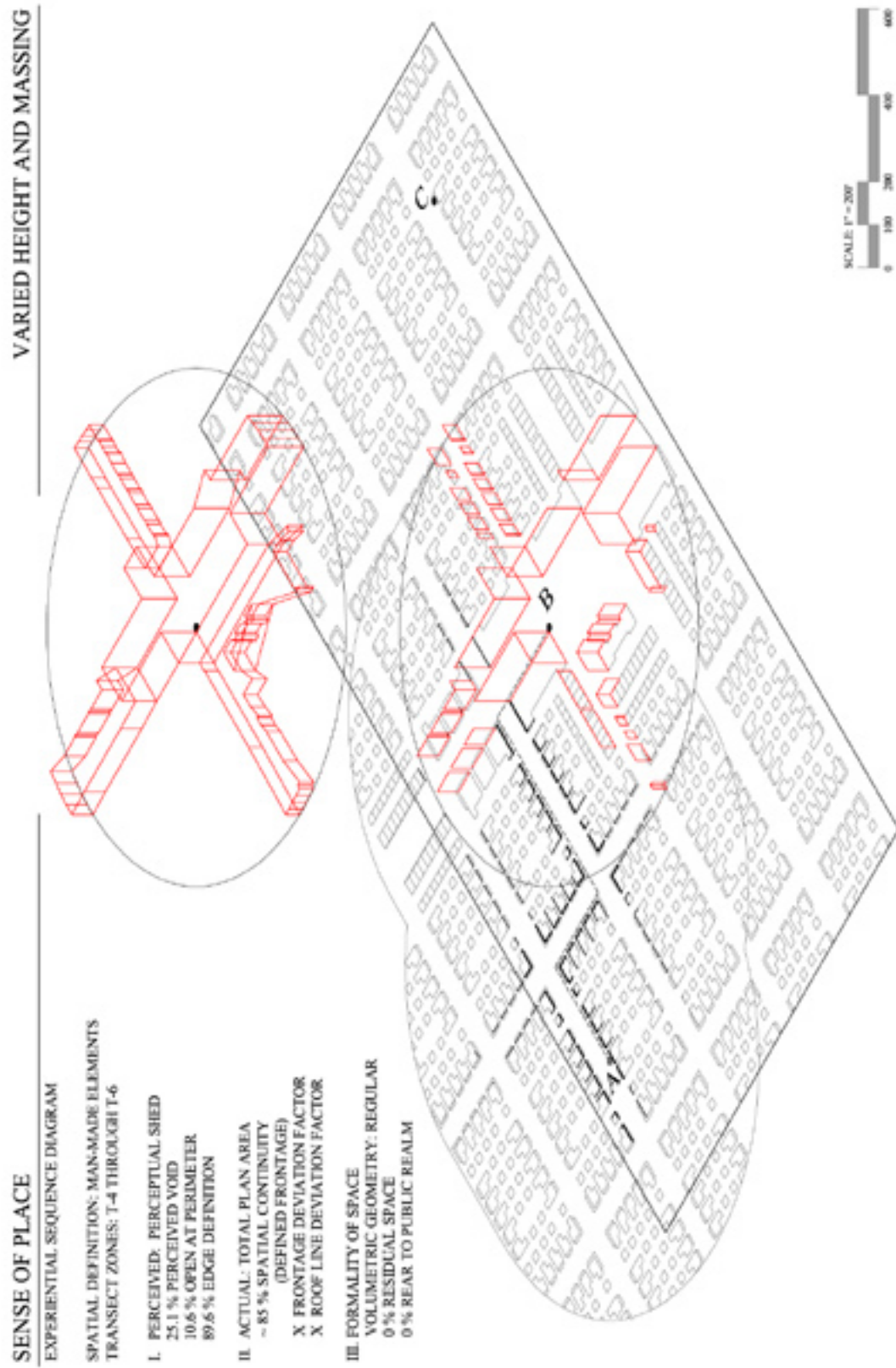




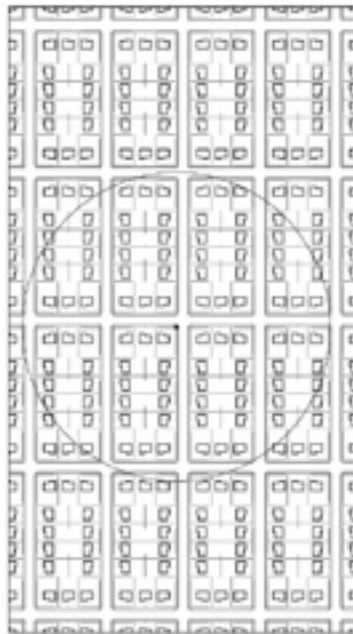
Figure 2.10: Stimulus studies: block patterns

## BLOCK PATTERNS

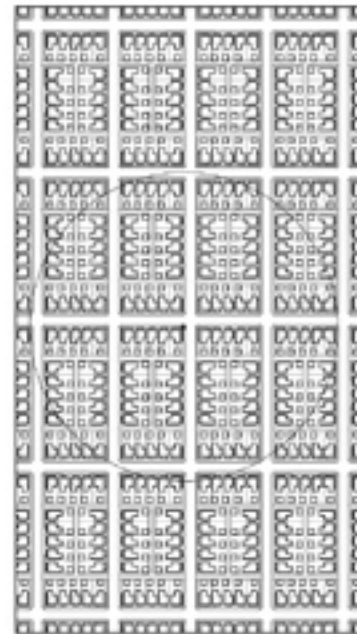
LEVEL OF STIMULUS VARIES WITH THE REGULARITY OF BLOCK  
PATTERN, BUILDING TYPOLOGY, AND STREET TYPOLOGY

## STIMULUS STUDIES

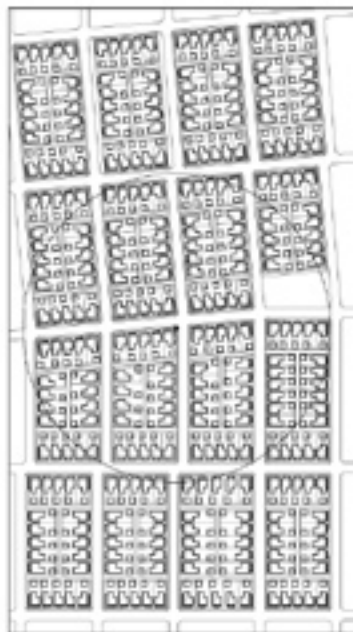
ANTICIPATED PREDICTABILITY



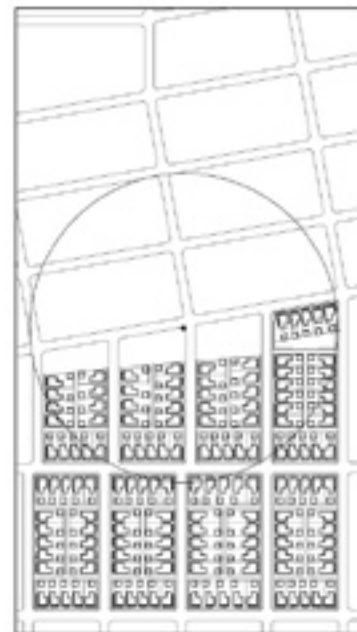
VERY WEAK STIMULUS  
NO VARIETY OR VARIATION  
HIGH PREDICTABILITY  
LOW DEGREE OF SPATIAL DEFINITION



WEAK STIMULUS  
LITTLE VARIETY AND VARIATION  
HIGH PREDICTABILITY  
MEDIUM / HIGH DEGREE OF SPATIAL  
DEFINITION



MEDIUM STIMULUS  
SOME VARIETY AND VARIATION  
LOW PREDICTABILITY  
MEDIUM / HIGH DEGREE OF SPATIAL  
DEFINITION



MEDIUM STIMULUS  
SOME VARIETY AND VARIATION  
LOW PREDICTABILITY  
MEDIUM / HIGH DEGREE OF SPATIAL  
DEFINITION

SCALE: 1" = 400'  
0 200 400 600 800

Figure 2.11: Spatial complexity diagrams

THOROUGHFARE SPATIAL COMPLEXITY

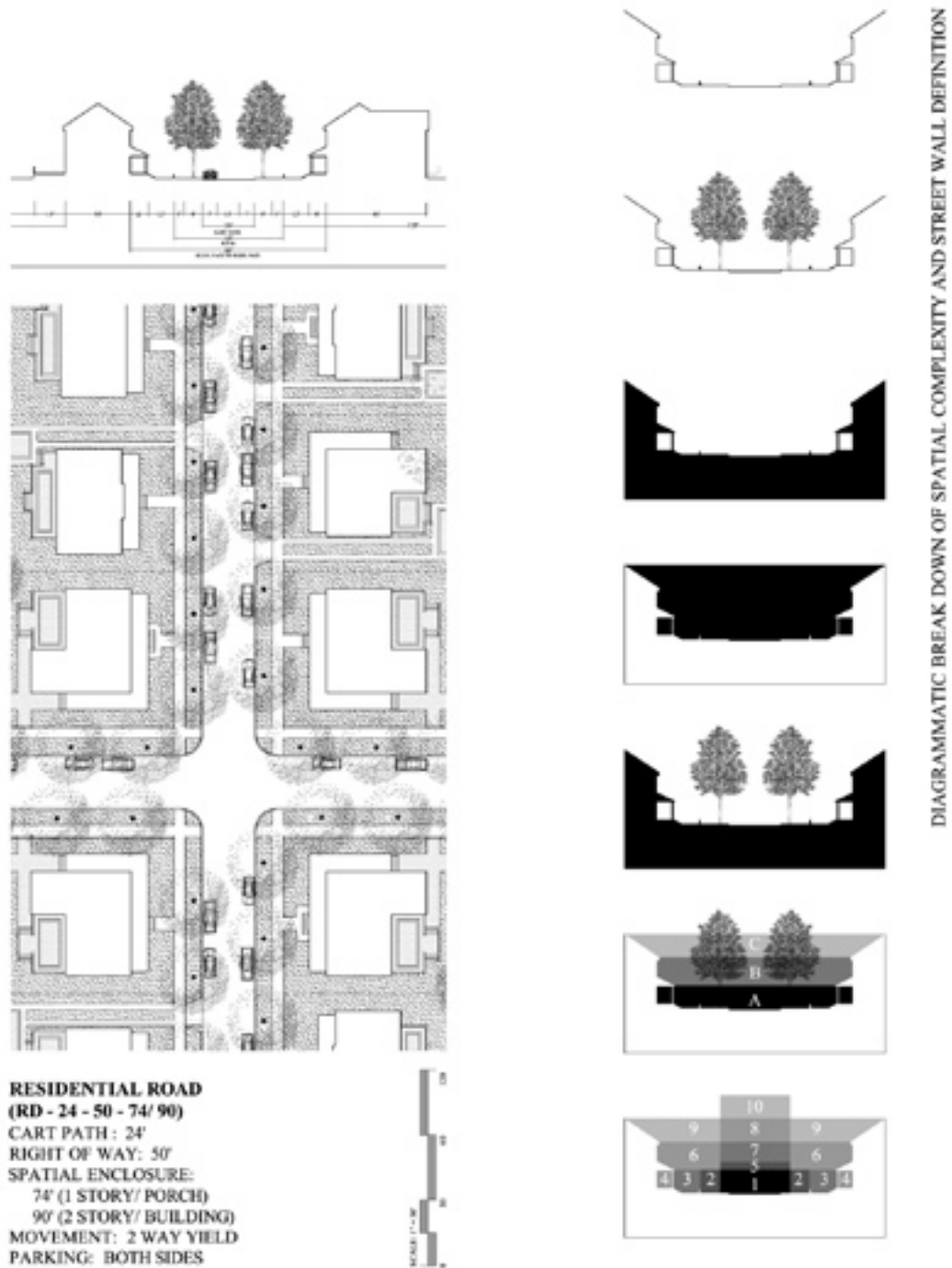
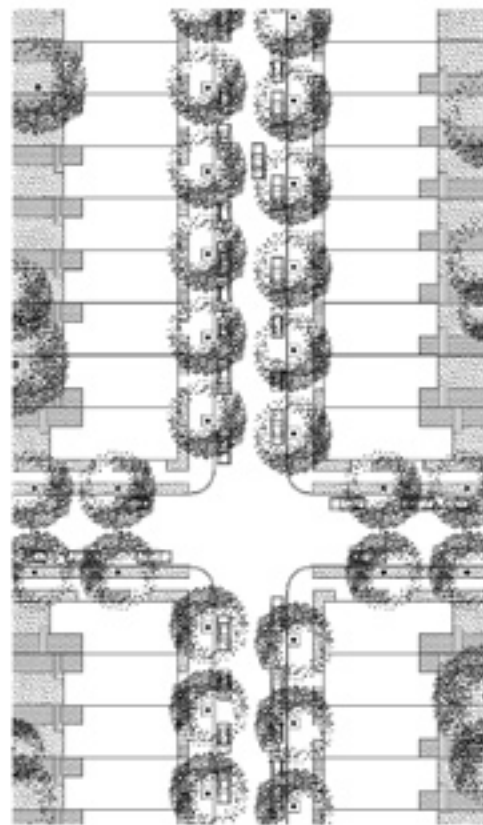
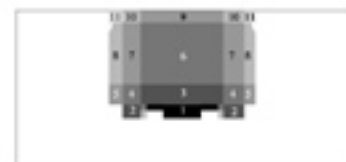
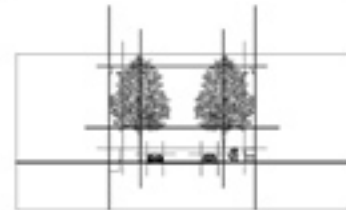
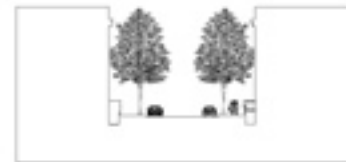


Figure 2.12: Spatial complexity diagrams

THOROUGHFARE SPATIAL COMPLEXITY



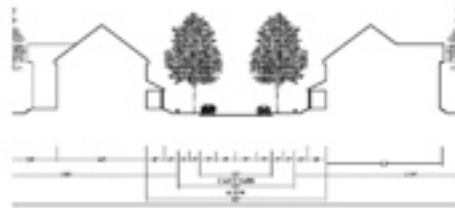
**RESIDENTIAL STREET 'B'**  
 (ST - 30 - 52 - 62)  
 CART PATH : 30'  
 RIGHT OF WAY: 52'  
 SPATIAL ENCLOSURE: 62'  
 MOVEMENT: 2 WAY SLOW  
 PARKING: BOTH SIDES



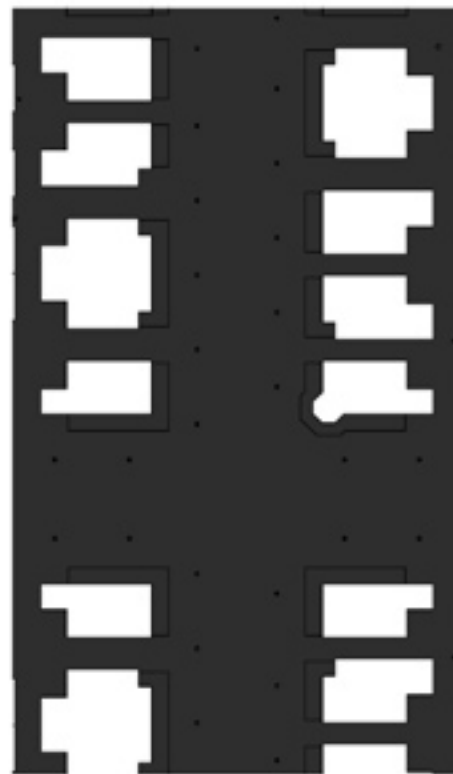
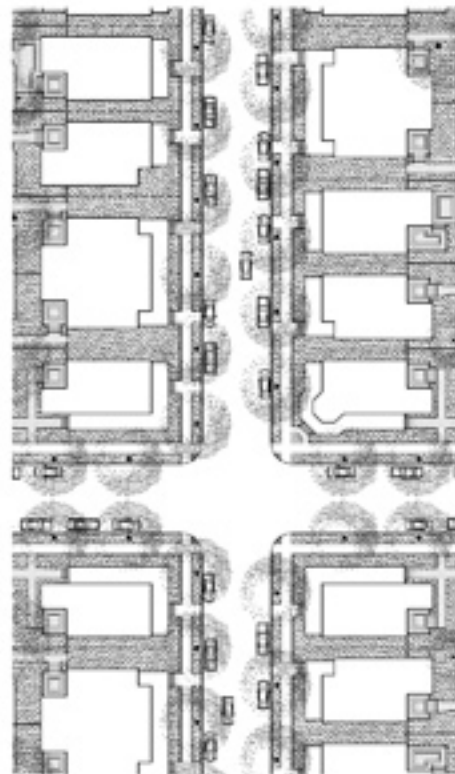
DIAGRAMMATIC BREAK DOWN OF SPATIAL COMPLEXITY AND STREET WALL DEFINITION

Figure 2.13: Spatial complexity diagrams

THOROUGHFARE SPATIAL COMPLEXITY



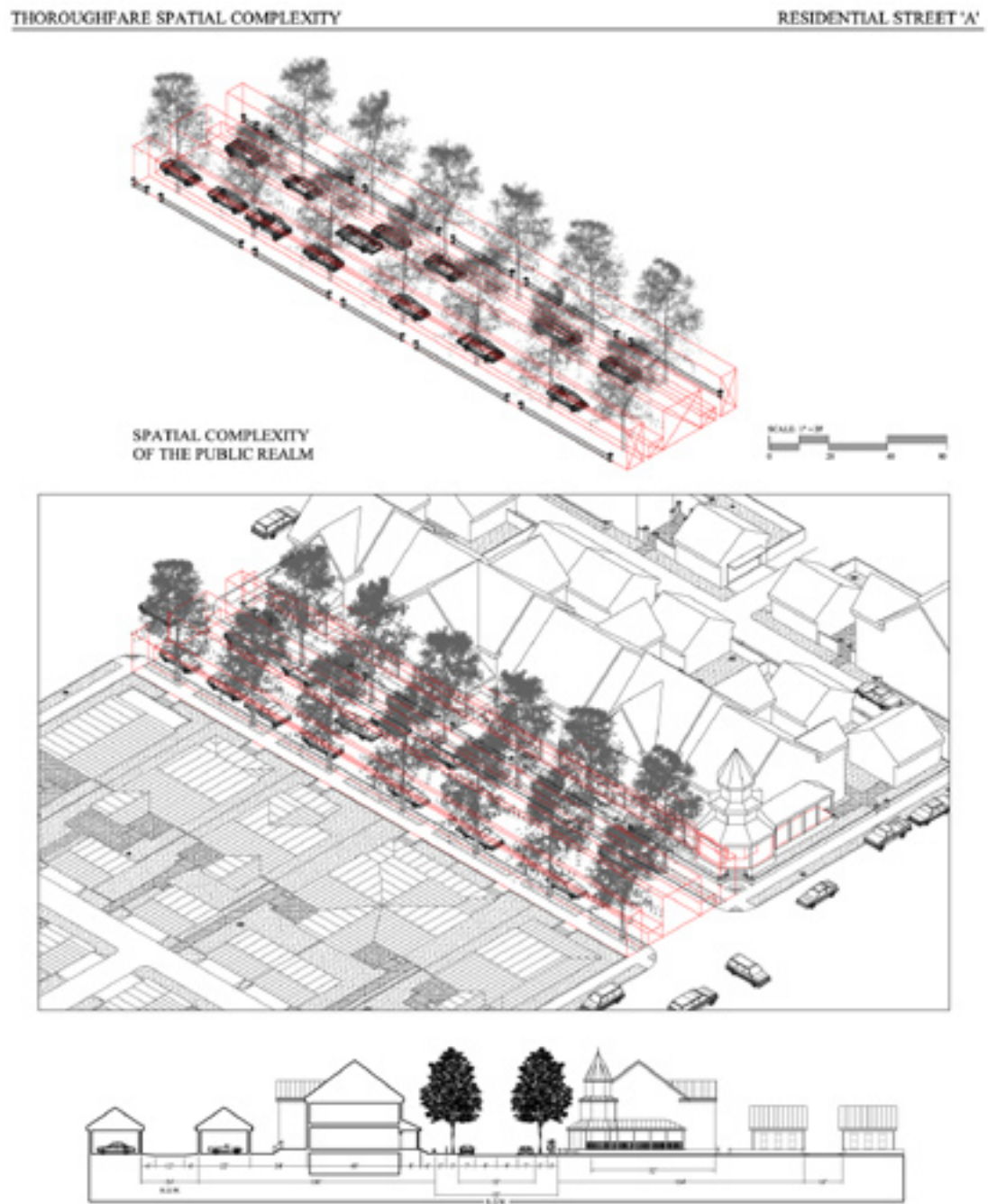
SPATIAL CAST DIAGRAMS  
(FIGURE / GROUND)



**RESIDENTIAL STREET 'A'**  
(ST - 32 - 52 - 64/ 80)  
CART PATH : 32'  
RIGHT OF WAY: 52'  
SPATIAL ENCLOSURE:  
64' (1 STORY/ PORCH)  
80' (2+ STORY/ BUILDING)  
MOVEMENT: 2 WAY FREE  
PARKING: BOTH SIDES



Figure 2.14: Spatial complexity diagrams



## CHAPTER 3

### FALLACY VS. REALITY

#### 3.1 “Sticks and Stones”: The written word and planning intent

##### FALLACY OF CONVENTIONAL ZONING VERBAL INTENTIONS:

1972 Zoning Ordinance of Loudoun County, VA  
(The same ordinance that Ashburn Farm was built according to)

##### ARTICLE 1 – AUTHORITY, **PURPOSES AND INTENT**

#### 102.3 To facilitate the creation of a convenient, attractive and harmonious community

##### ARTICLE 7 - SPECIAL DISTRICTS

#### 700 PD: PLANNED DEVELOPMENT DISTRICTS, GENERALLY

##### 700.1 Intent

**Within PD districts, regulations adapted to such unified planning and development are intended to promote economical and efficient land use, an improved level of amenities, appropriate and harmonious variety in physical development, creative design, and a better environment.**

##### 700.2.1 Modification of Ratios in Mixed Uses Areas of Planned Development Housing Districts

3. **The modifications are in conjunction with a traditional neighborhood development incorporating the following features:**
  - a. **Dwellings, shops and workplaces, all limited in size are located close to each other**
  - b. **A variety of streets serve equitably the needs of the pedestrian and the automobile**
  - c. **Well defined squares and parks provide places for informal social activity and recreations.**
  - d. **Well placed civic buildings provide places of purposeful assembly for social cultural and religious activities and which can become symbols of community identity.**
  - e. **Buildings are located along streets and squares forming a disciplined edge largely**

- unbroken by parking lots.
- f. Street networks are laid out generally in a grid pattern without cul-de-sacs.**

On Ashburn Farm:

**“Cavalier Land Development Corp., developers of Ashburn Farm, planned the community to blend with the natural rolling terrain, resulting in winding boulevards and lots of trees.”**

*- Ashburn Farm Association*



REALITY OF CONVENTIONAL ZONING  
VISUAL RESULTS:

Figure 3.01: Ashburn Farm as it exists today.



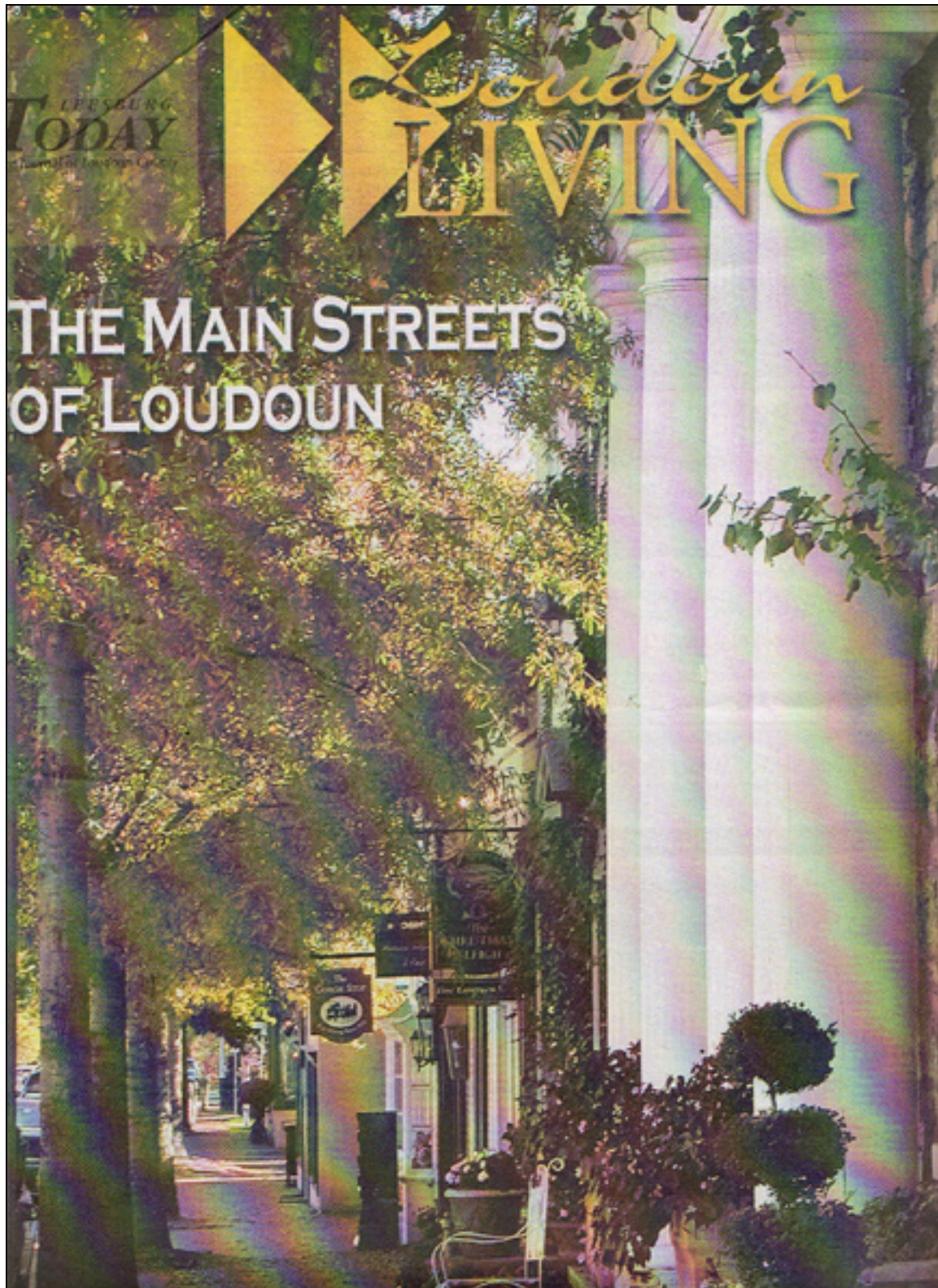


Figure 3.02: The romantic misconception

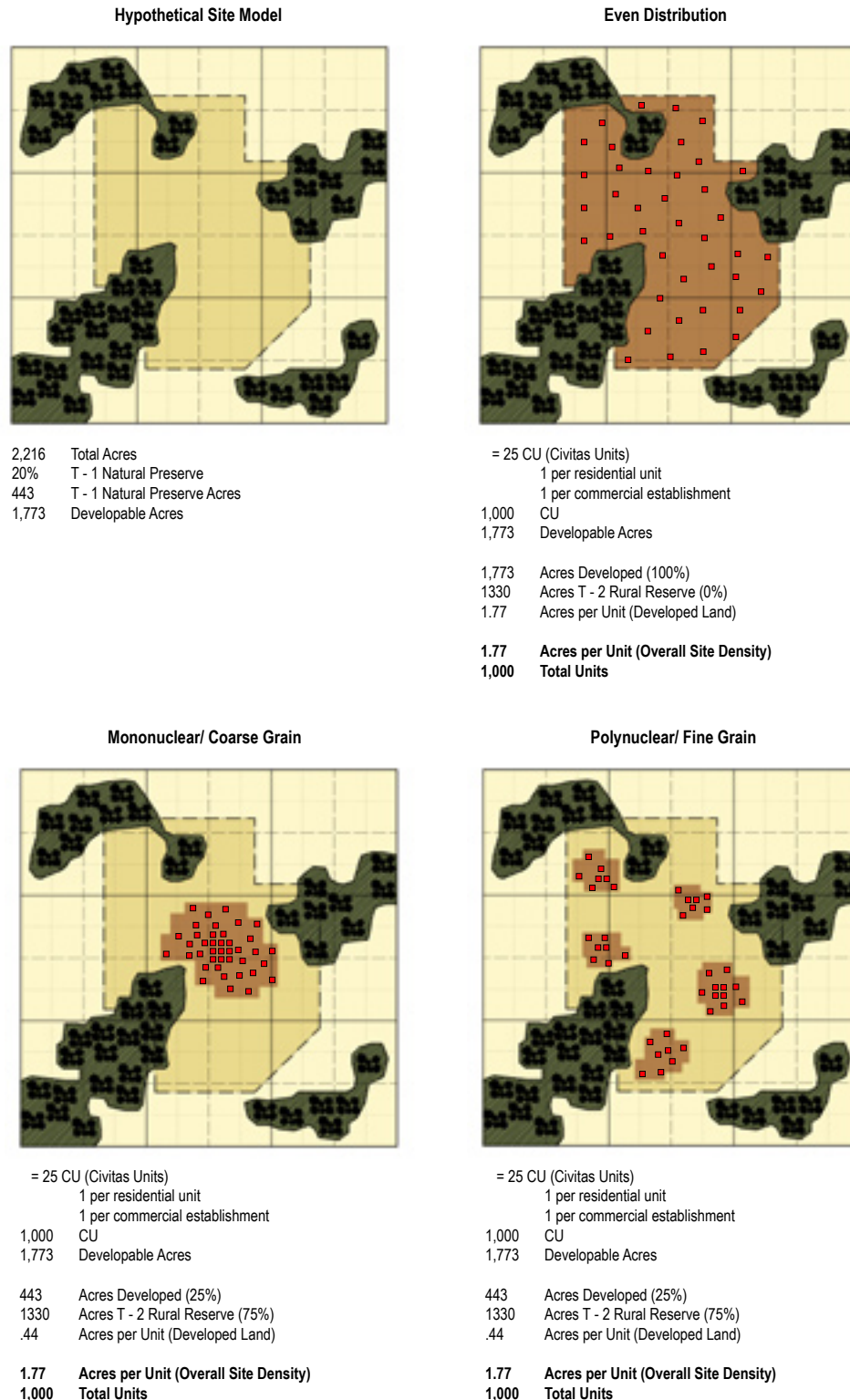




Figure 3.03: The harsh truth

Figure 3.04: Density as a criteria for measuring growth, all examples have the same net density

This series of diagrams illustrates why the current criteria of “raw” density (population per unit area), commonly used by municipalities as a measure of growth, is inadequate in anticipating the dispersion pattern of a given population without explicit written provisions.



## CHAPTER 4

### SITE

#### **4.1 Site Selection**

A greenfield site was chosen for this study because this is the habitat of “sprawl.” Land affordability and availability facilitates the creation of low density, fragmented development, whereas other types of sites (i.e. greyfield, brownfield, and infill sites) have higher acquisition costs, greater barriers to entry, and greater zoning complications that usually mandate more intensive land uses to justify such expenses. This is not to say that poor design can not result in such areas; often mistaken as “sprawl.”

#### **4.2 Ashburn Farm, Loudoun County, VA**

Loudoun County is currently the second fastest growing county (by percentage of total population) in the United States. Over the past fifteen years it has consistently been ranked in the top five nationwide.

#### **The Crystal Ball:**

The county has under gone a rapid transformation in a very short period of time. If anywhere in the nation has to have stringent policies about land use to control growth one would think that it would be here. Since the population of Loudoun County has grown so rapidly, its pattern of growth can serve as a model for other counties who are currently experiencing slower rates of growth. These counties will hopefully be able to foresee their future patterns of growth

within the accelerated time-frame of Loudoun County so that potential policy errors may be quickly identified and corrected. This study will hopefully promote more stringent and explicit zoning ordinances to insure that counties get the resulting landscape and patterns of growth that they desire.

**Site:**

Ashburn Farm  
Ashburn, VA  
Developed 1988 to present  
Developer: Natelli Communities  
Financing Lender: Chevy Chase Bank

**4.3 History of the county:**

“Loudoun County exemplifies country life in about the purest and pleasantest form that I have yet found in the United States. Not that it is a rural Utopia by any means, but the chief ideals of the life there are practically identical with those that have made country life in the English counties world-famous. As a type, this is, in fact, the real thing. No sham, no artificiality, no suspicion of mushroom growth, no evidence of exotic forcing are to be found in Loudoun, but the culmination of a century’s development.”

“So much, then, to show briefly that Loudoun County life is a little out of the ordinary, here in America, and hence worth talking about. There are other communities in Virginia and elsewhere that are worthy of eulogy, but I know of none that surpasses Loudoun in the dignity, sincerity, naturalness, completeness and genuine success of its country life. “

- Walter A. Dyer, *Country Life in America*

These were the words written by the prolific author of the early 20<sup>th</sup> century, Walter A. Dyer, about the character of Loudoun County in the early 1900’s. The county has changed a bit since then.

Even though the intentions of Loudoun County’s zoning ordinances in the past have attempted to preserve the very character of the county that Dyer wrote so eloquently about over 100 years ago, the reality of the resulting landscape created by such an ordinance is far different.

#### 4.4 History of the site:

James W. Head on Ashburn in 1908:

“Ashburn, a railway town in lower Loudoun, formerly known as Farmwell, is 34 miles from Washington, 31 miles from Alexandria, 4 miles northwest of Sterling, and 6 miles from Leesburg. It is in the heart of one of the richest and most extensive dairying sections of the State, and has become somewhat famous as a resort for anglers, the bass fishing in Goose Creek, near by, being eminently satisfying and attracting many devotees of the sport from Washington and other more distant points.”

- James W. Head, *History of Loudoun County Virginia*

How can we possibly manage and control something which we can not measure?

Planning officials would like to believe that they can monitor sprawl and that they are controlling it, however the same landscapes in which they govern tell a much different story.

There has been a cataclysmic shift in our approach to zoning and planning over the past century. Adopting the words of American architectural critic, Wayne Andrews, there are fundamentally two approaches to design in 20<sup>th</sup> Century America: Veblenite and Jacobite. “A Veblenite would rather listen to the answers of a machine, where as a Jacobite would more likely listen to the questions of a man” (Martinson, 71).

Figure 4.01: Regional transit system: proposed and speculative





Figure 4.02: Regional topography

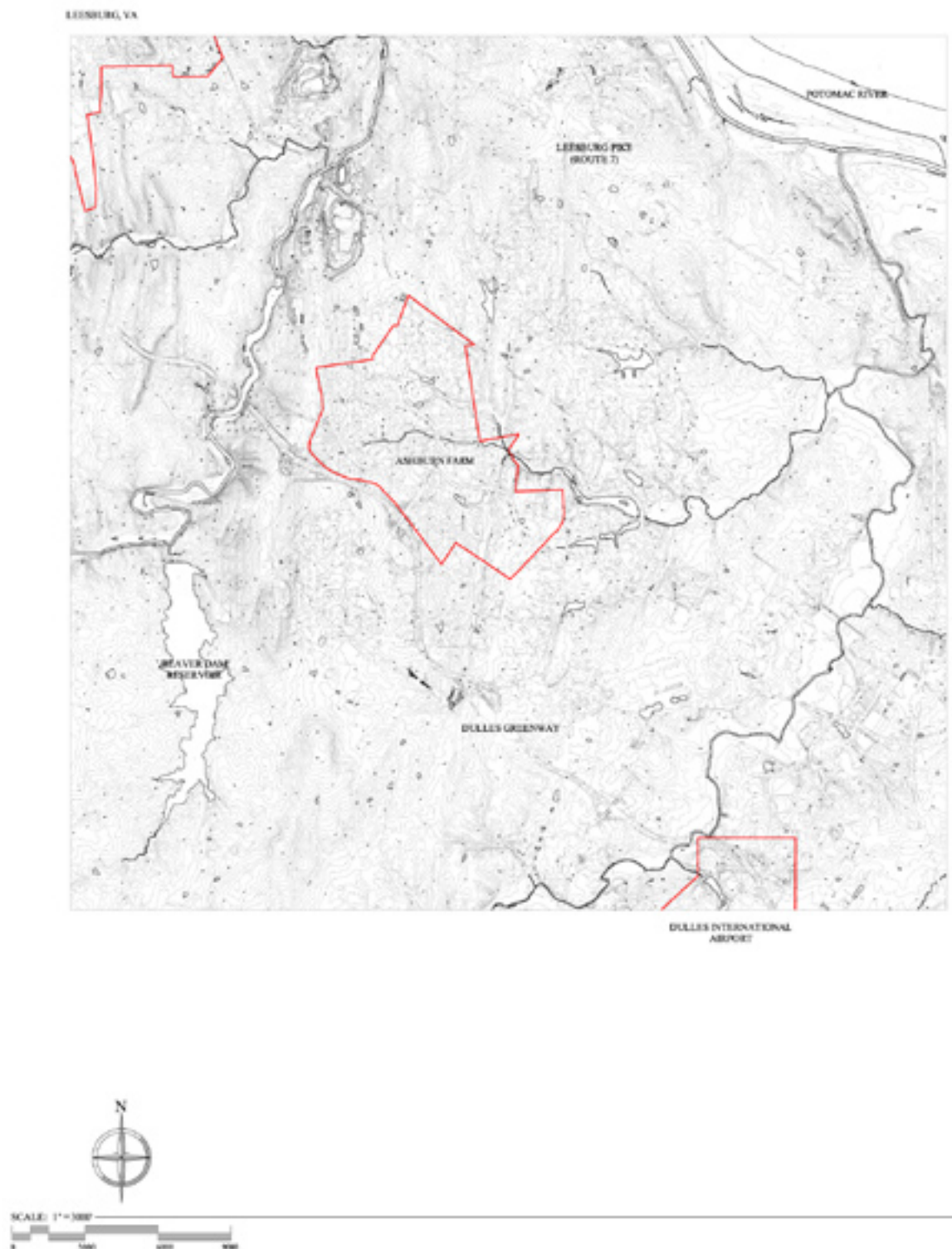


Figure 4.03: Regional stream network and floodplains

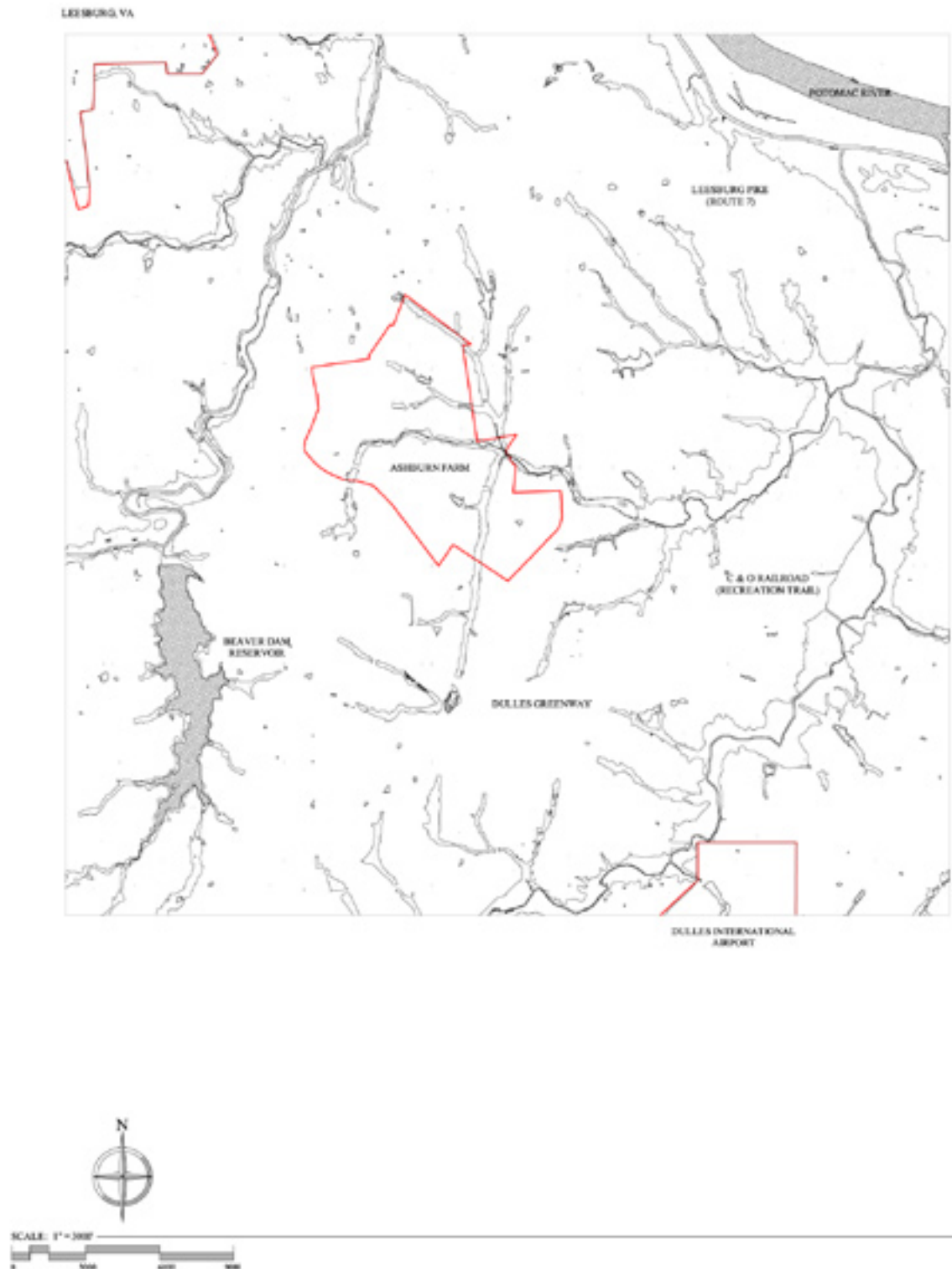


Figure 4.04: Existing regional road network

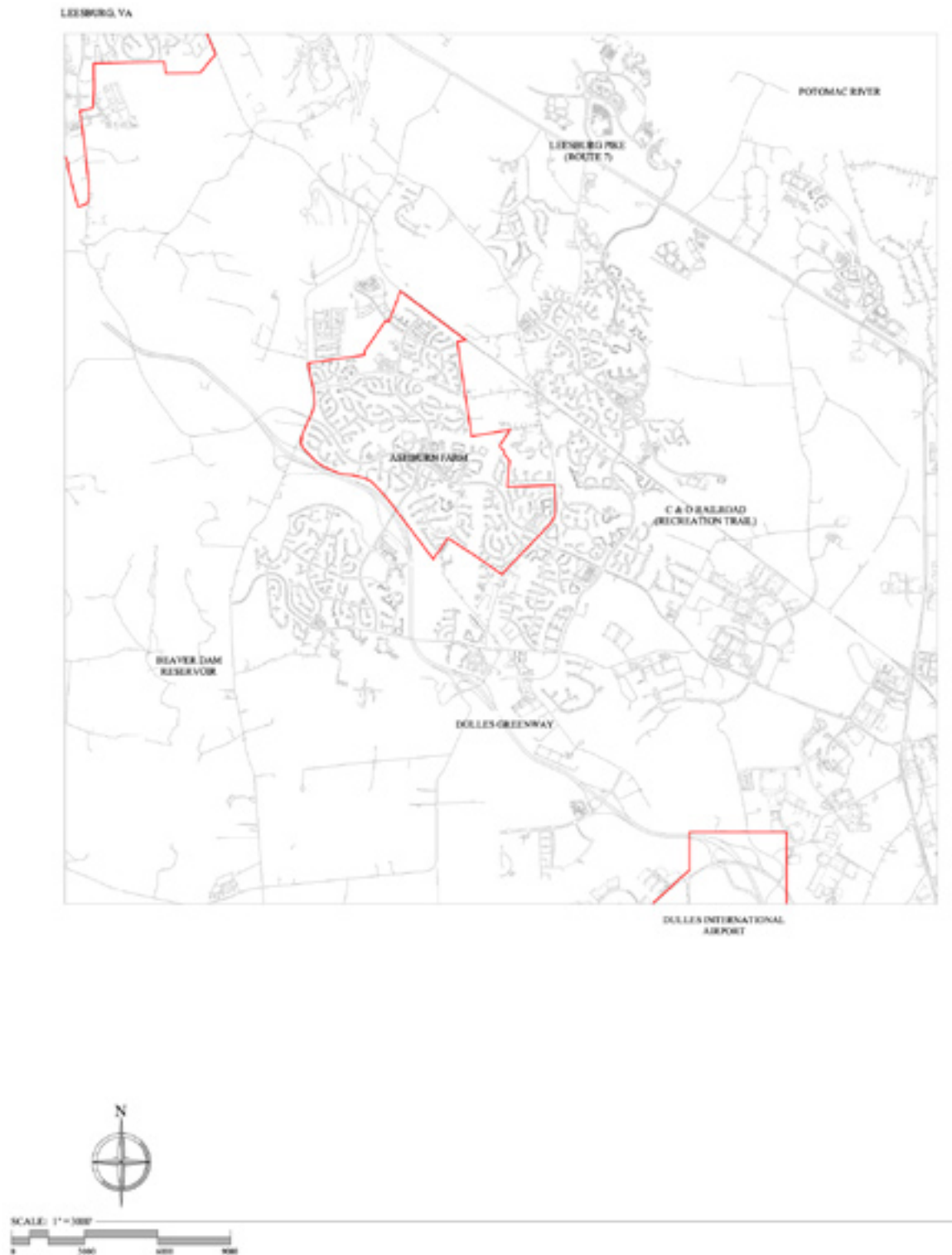


Figure 4.05: Existing Buildings

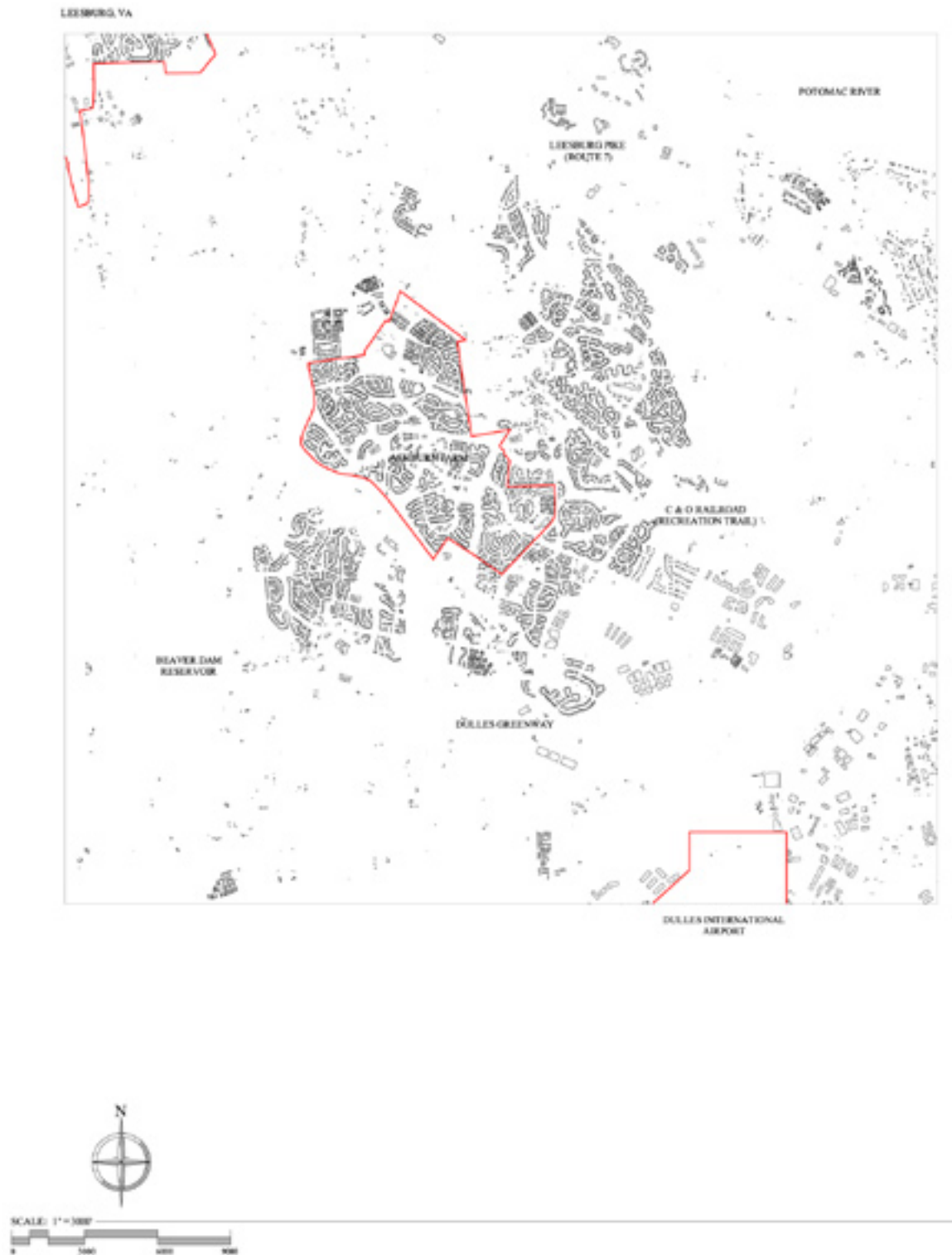


Figure 4.06: Existing property lines

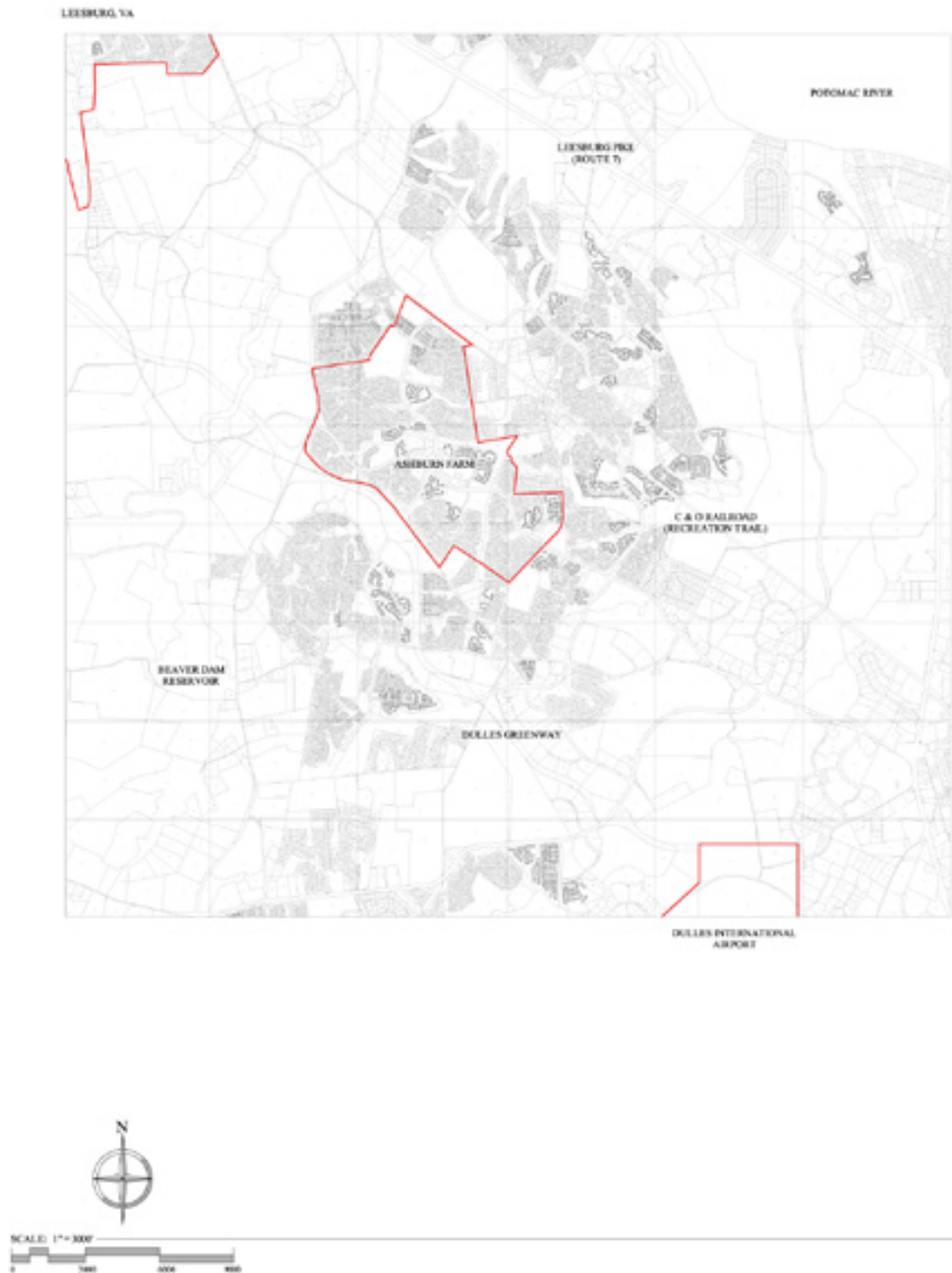




Figure 4.07: Existing site plan



Figure 4.08: Natural features

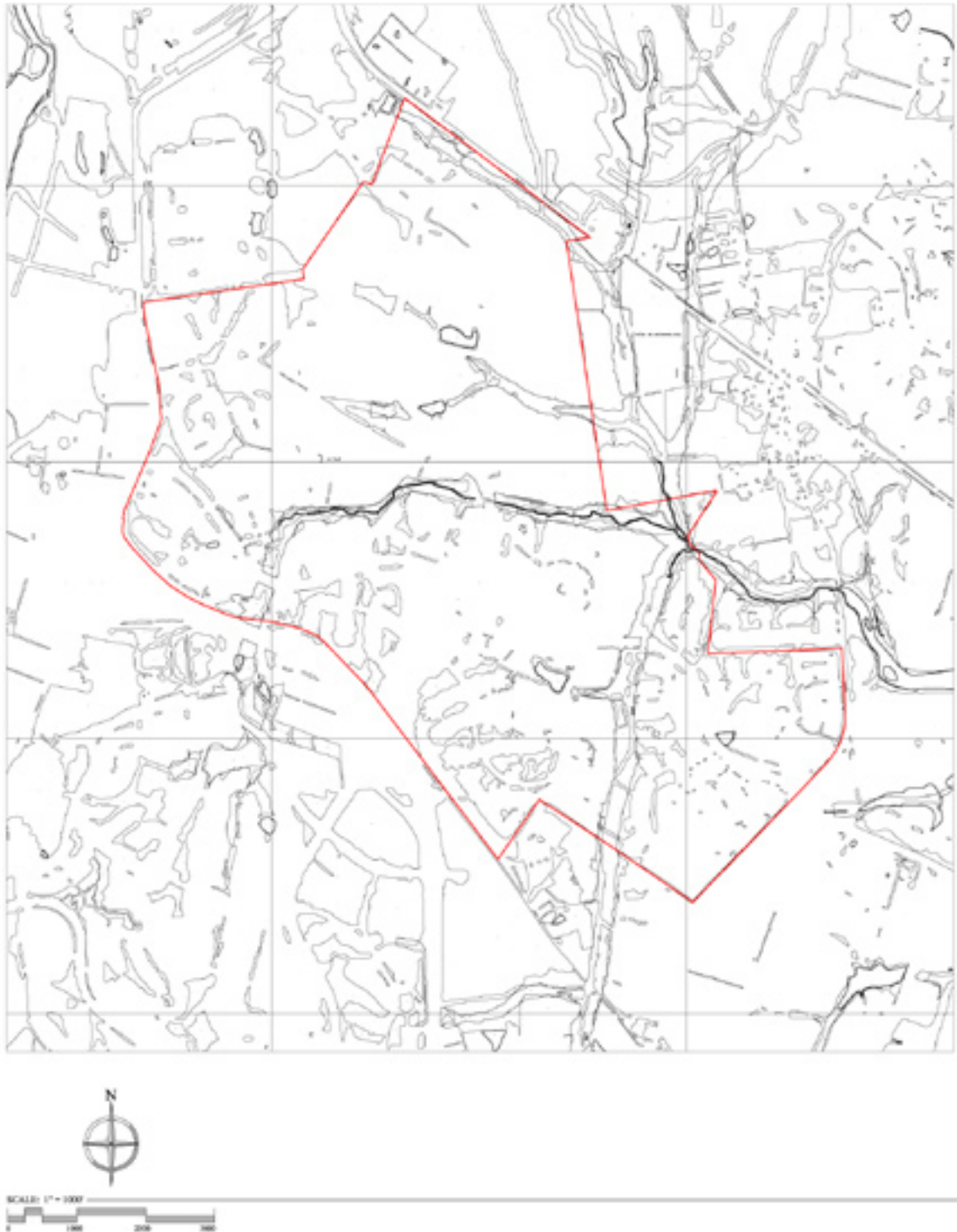


Figure 4.09: Existing property lines

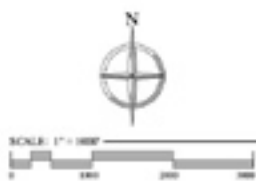




Figure 4.10: Existing street network



Figure 4.11: Existing buildings and major thoroughfares



Figure 4.12: Existing land-use: Euclidian zoning and homogeneous pods

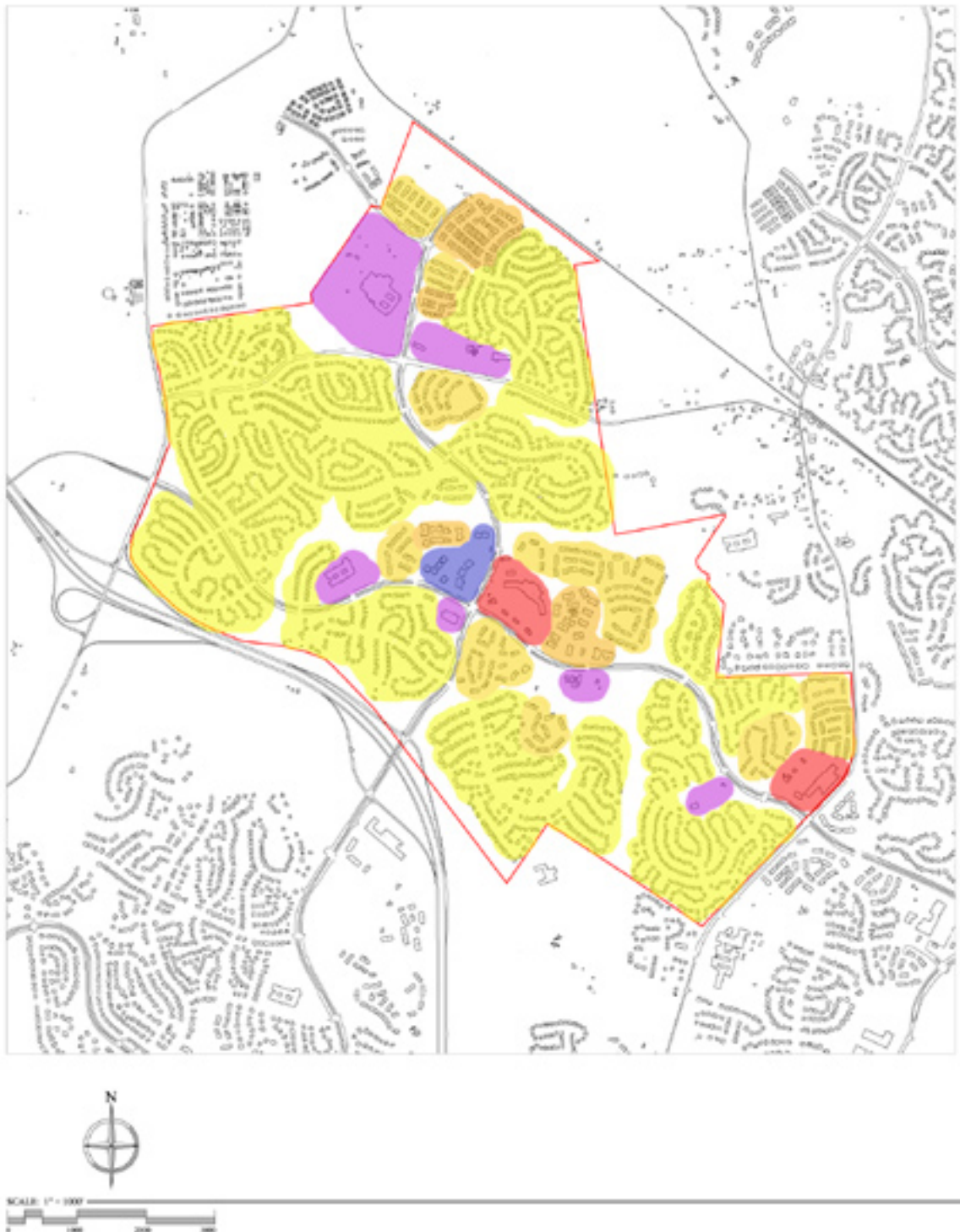


Figure 4.13: Sense of place analytical diagram

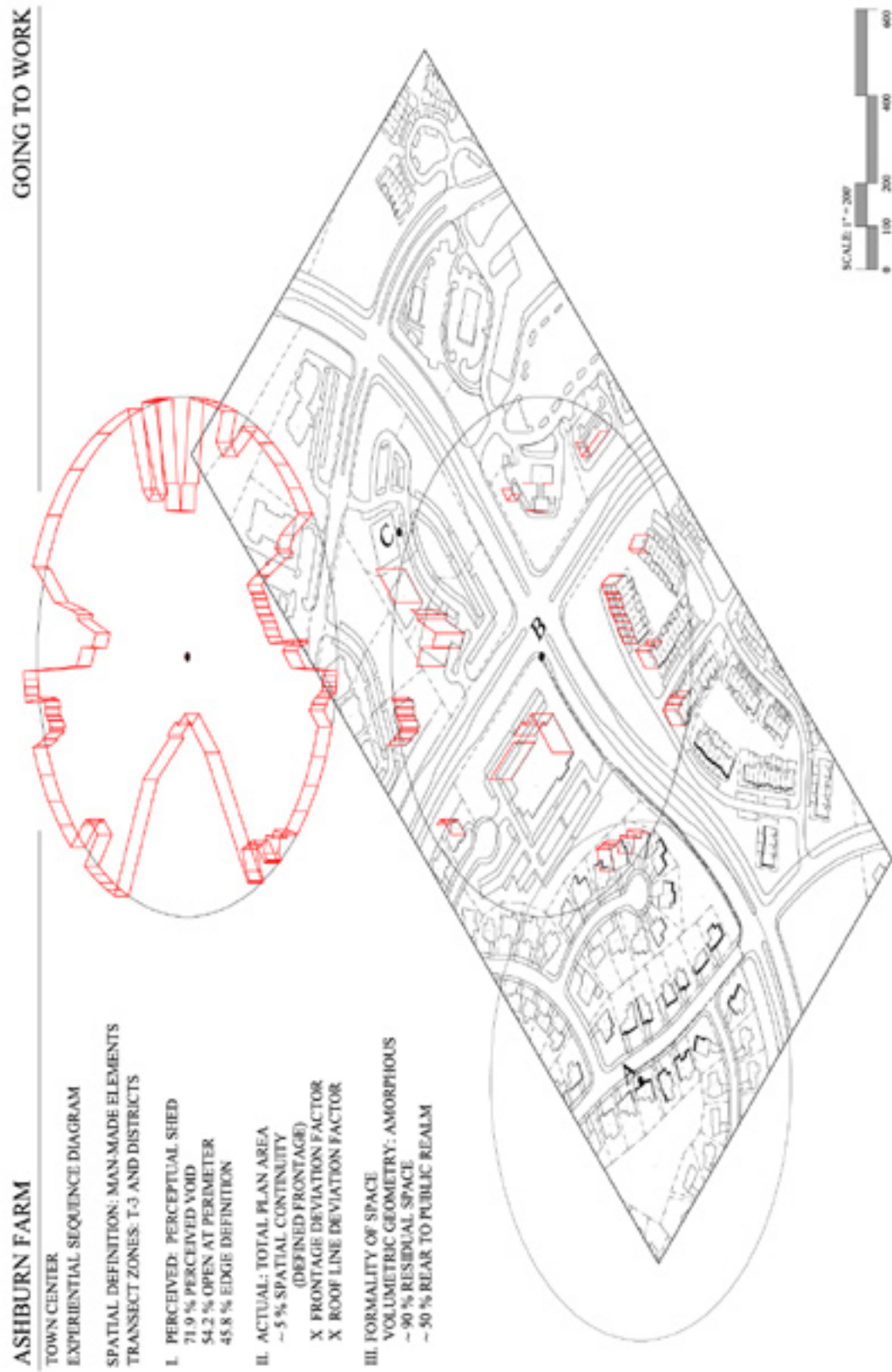




Figure 4.14: Sense of place analytical diagram

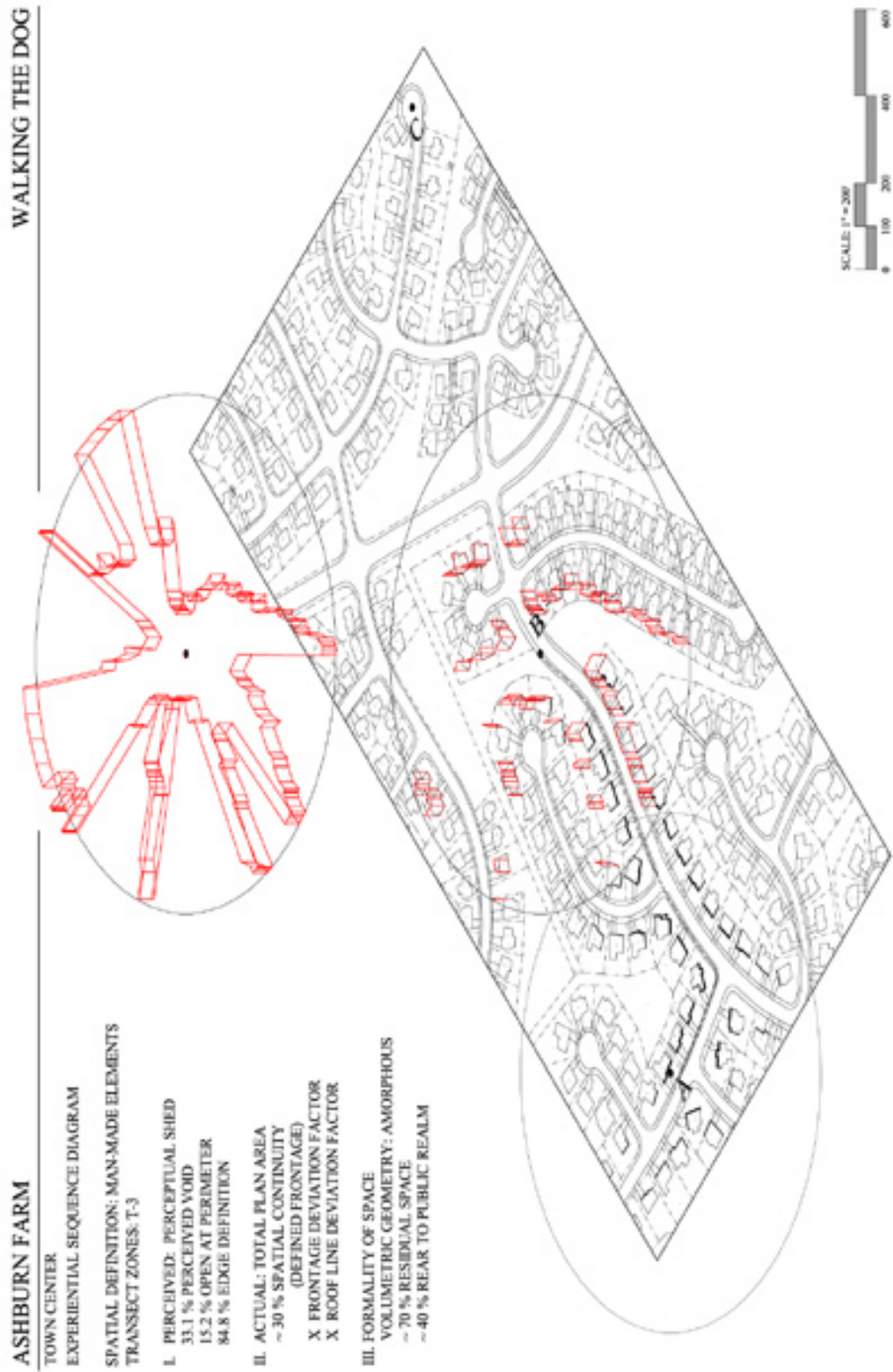
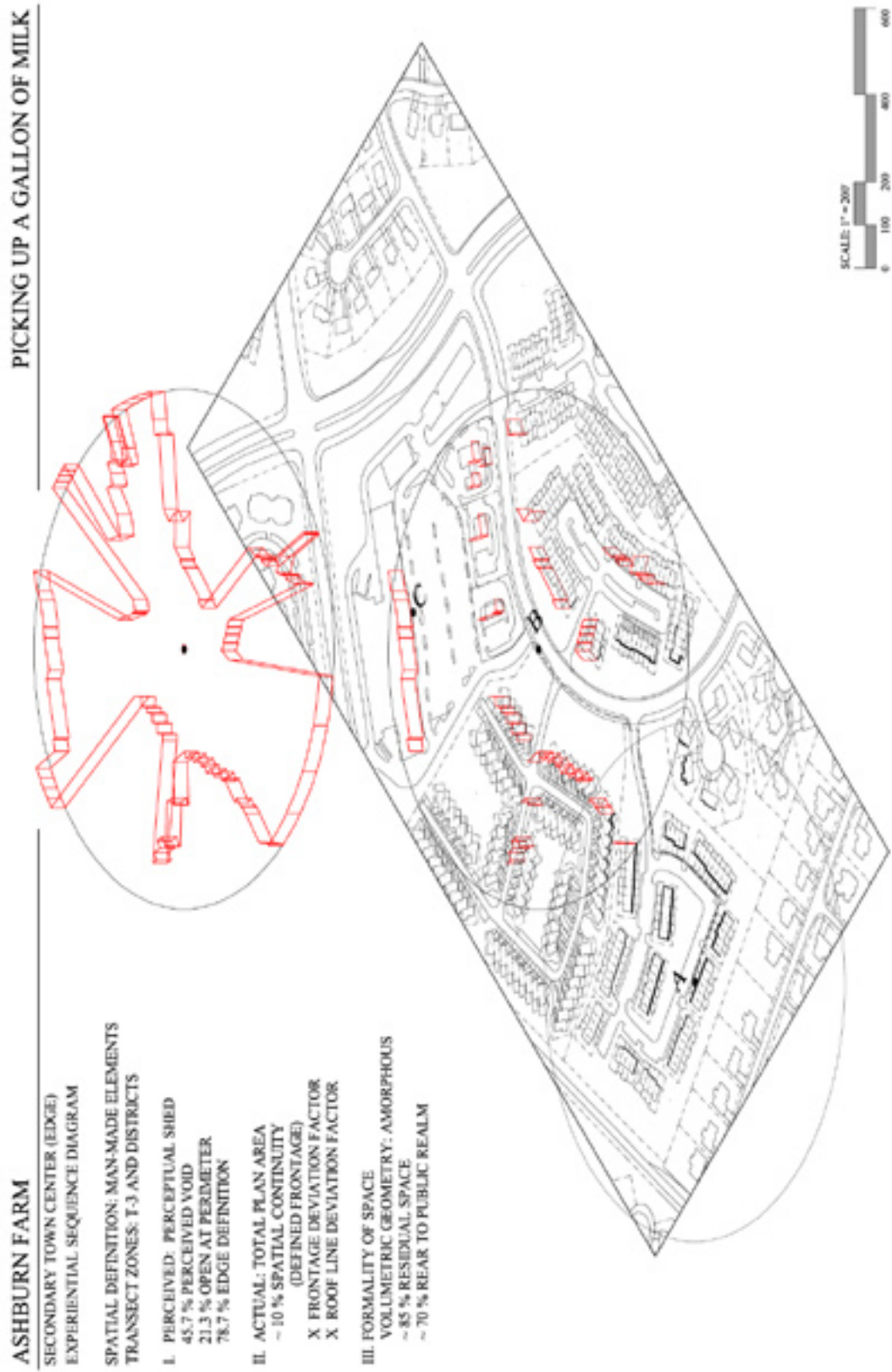


Figure 4.15: Sense of place analytical diagram



## CHAPTER 5

### URBANISM

#### 5.1 Overview and objectives

Originally, my intention was to test the theory of Immersivity by designing/ hypothetically “developing” the existing development of Ashburn Farm in three different ways:

1. Hybrid Development plan

- Formal characteristics resemble those of New Urbanist principles, such as thoroughfare standards, setbacks, lot sizes, etc; however such a type of development compromises on a number of key issues such as diversity and integration of uses (units are still arranged in homogenous pods).

2. Traditional Neighborhood Development plan according to the SmartCode.

3. Conservation development plan as written about by Randall Arendt

Unfortunately, due to the time constraints of the study I was only able to test one of these alternative forms of development, the Traditional Neighborhood Development alternative. In order to produce any sort of convincing results one would have to continue this experiment and test all three alternatives. This method could also be expanded to test existing regional and historical examples in order to test my findings on a wider data base (i.e. Areas that I suspect will have HIGH immersiveness values: Frederick, Annapolis, Alexandria, Georgetown, Kentlands, King Farm, etc.. and areas that I suspect will have LOW immersiveness values: Tysons Corner, Silver Spring, Owings Mills, etc...).

The two plans were designed using the exact same program and abided by the same site constraints.



Table 5.1: Program of Ashburn Farm

**The existing program of Ashburn Farm is as follows:**

(constant in both schemes)

<b>Land Use</b>	<b>Acres</b>	<b>Units</b>	<b>DU/ Acre</b>
<b>Town Center</b>	18.8		
125,000 SF Retail			
3 Restaurants			
Service Station			
Fire/ Rescue Station			
<b>Village Center</b>	14.1		
100,000 SF Retail			
1 Restaurant			
Service Station			
<b>Office</b>	6.0		
75,000 SF			
<b>Residential</b>			
Garden Apartments/			
Multi-Family	42.5	766	18.0
Townhouse	185.3	1340	7.2
Single Family	560.5	1724	3.0
<b>Town Recreation Center</b>	14.0		
Pool			
Tennis Courts			
Baseball Diamond			
Soccer Field			
<b>Village Recreation Center ‘A’</b>	10.2		
Pool			
Tennis Courts			
Baseball Diamond			
<b>Village Recreation Center ‘B’</b>	5.2		
Pool			
Tennis Courts			
<b>Recreation Area</b>	5.0		
Multi-Purpose Courts			
Exercise Trail			
<b>Loudoun County Parks &amp;</b>			

<b>Recreation (4 sites)</b>	55.0		
<b>High School</b>	45.0		
<b>Elementary School</b>	15.0		
<b>Library</b>	2,5		
<b>Churches (4 sites)</b>	15.0		
<b>Day Care (3 sites)</b>	4.0		
<b>H.O.A. Open Space</b>	165.0		
<b>Roads</b>	<u>111.1</u>	_____	_____
<b>Total:</b>	<b>1,274.2</b>	<b>3830</b>	<b>3.0</b>

Figure 5.01: Conventional Suburban Development plan

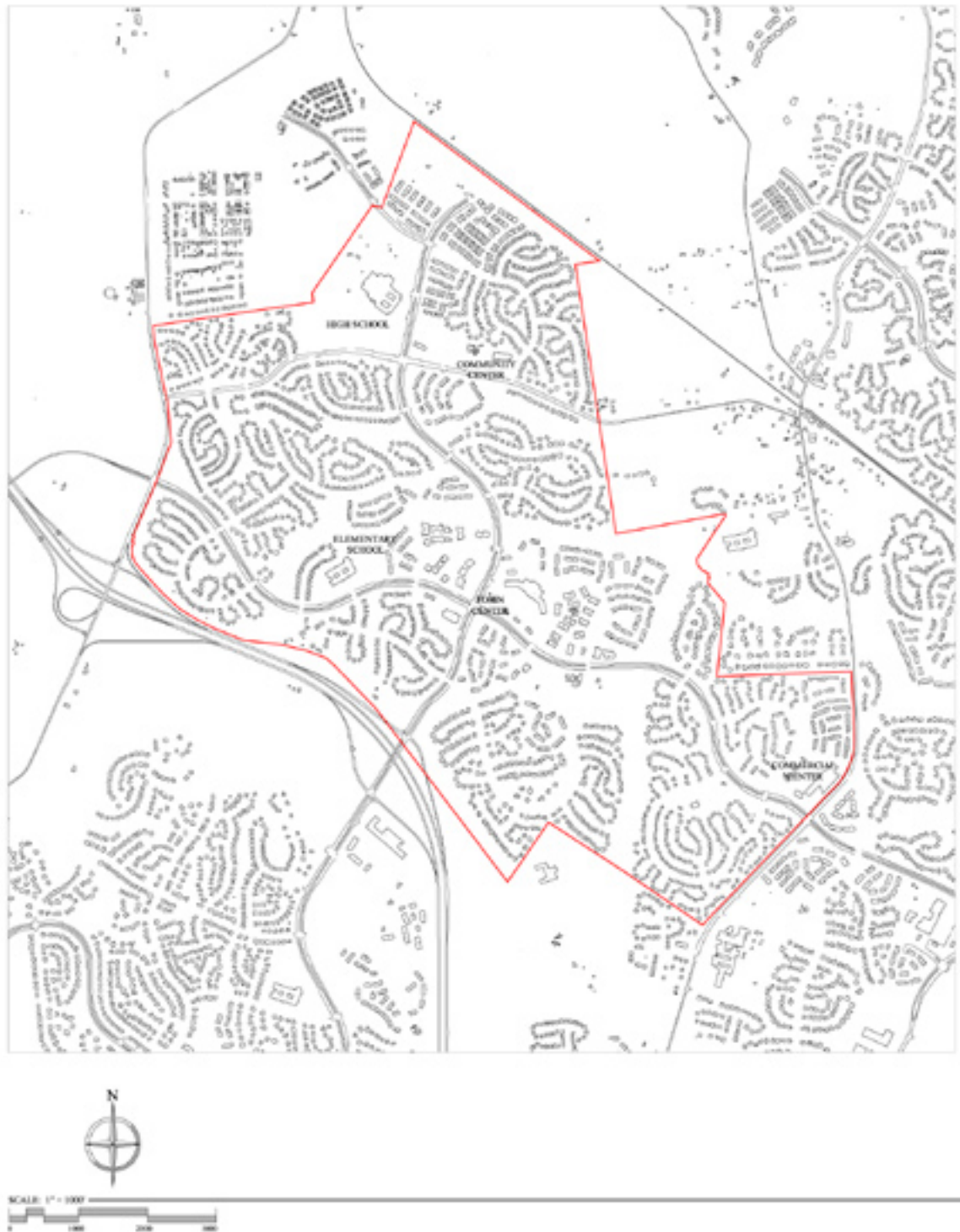


Figure 5.02: Preliminary Hybrid Development plan



Figure 5.03: Preliminary Traditional Neighborhood Development plan



Figure 5.04: Final Traditional Neighborhood Development plan

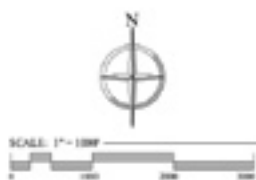




Figure 5.05: Conventional Suburban Development experiential renderings

CSD TOWNHOUSE UNITS

PARKING LOT OR STREET?

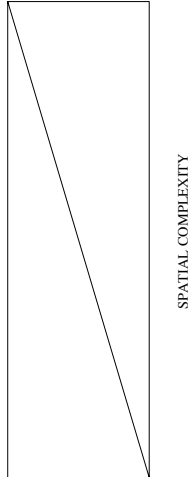
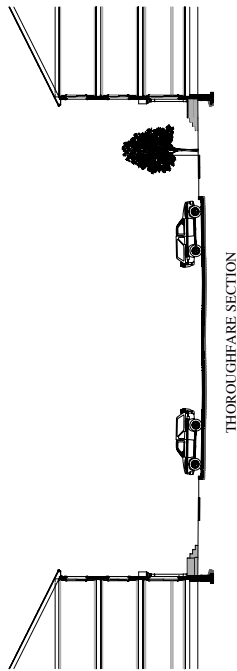
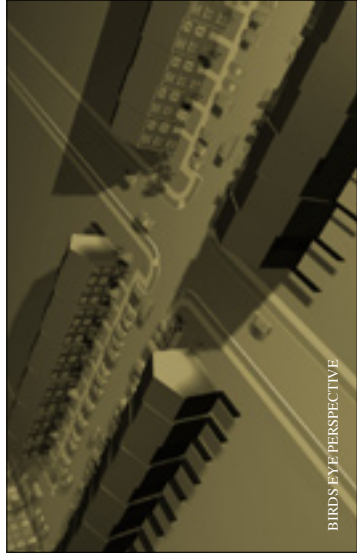




Figure 5.06: Traditional Neighborhood Development experiential renderings

TND ROWHOUSE UNITS

STREET (VARIED FACADES)

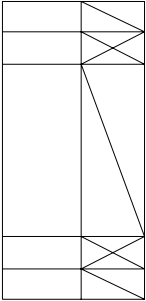
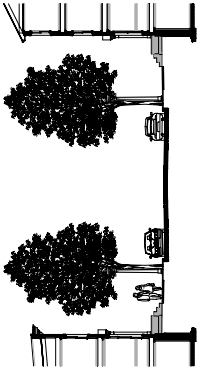


Figure 5.07: Conventional Suburban Development experiential renderings

CSD TOWNHOUSE UNITS

FRONT LOADED (VARIED FACADES)

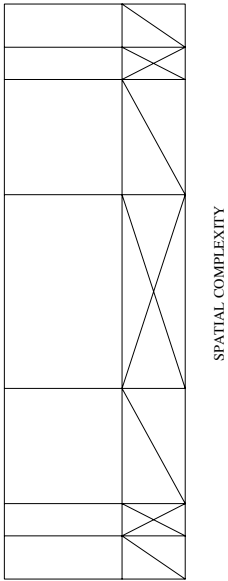
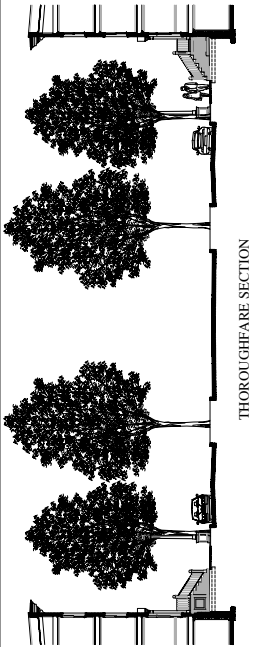
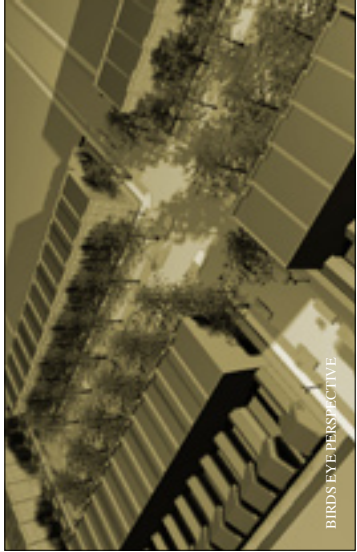


Figure 5.08: Traditional Neighborhood Development experiential renderings

TND ROWHOUSE UNITS



BOULEVARD



## CHAPTER 6

### ARCHITECTURE

#### **6.1 Overview and objectives**

The architectural portion of this study was carried out in much the same way as the urban comparison. Here too, two sets of residential units were compared using the same building program and construction techniques, yet each was assembled differently to correspond to differing design philosophies. The base model for comparison that was used was Centex's best selling townhouse model in the Washington DC metro area. The same program was dissected and rearranged in a number of different configurations, creating a variety of different streetscapes and environments.

Although the costs of detaching the garage were somewhat higher in the TND models I believe that such an added expense is necessary in order to radically alter the streetscape in order to make it more pedestrian friendly. A

As stated before in an earlier chapter, it is not so much about the cost as it is the return. Numerous studies (Knapp and Nelson, Eppli, et. al.) have consistently demonstrated that consumers are willing to pay a premium to live in such developments. If this is the case, as I believe that it is, then such a small additional expense is easily justified.



Figure 6.01: Preliminary Studies: Evolution of the Building (Loft / Flex Typology): Kit of Parts by floor plate

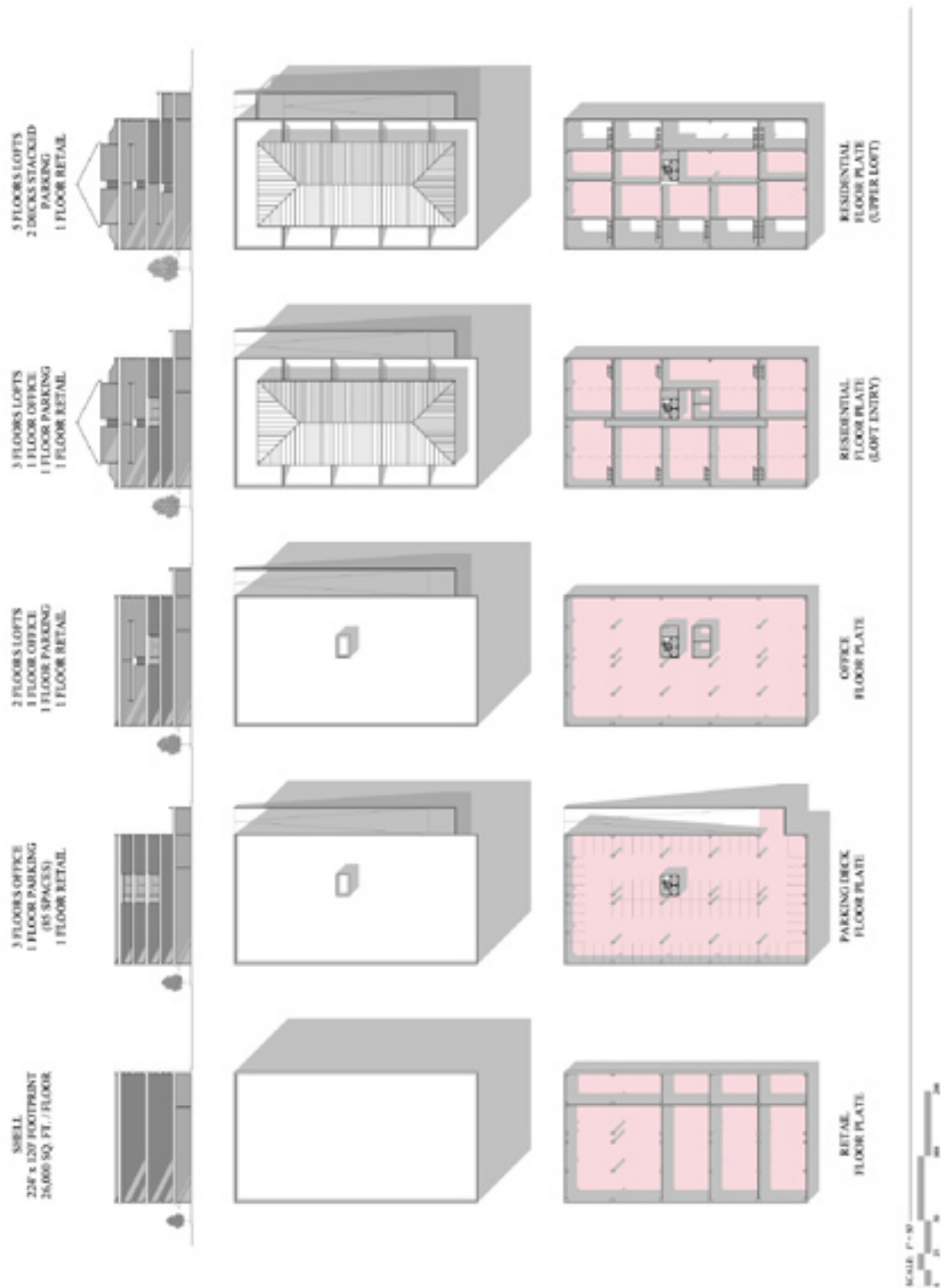


Figure 6.02: Preliminary Studies: Evolution of the Building (Loft / Flex Typology): Potential floor plate combinations



Figure 6.03: Preliminary Studies: Evolution of the Block

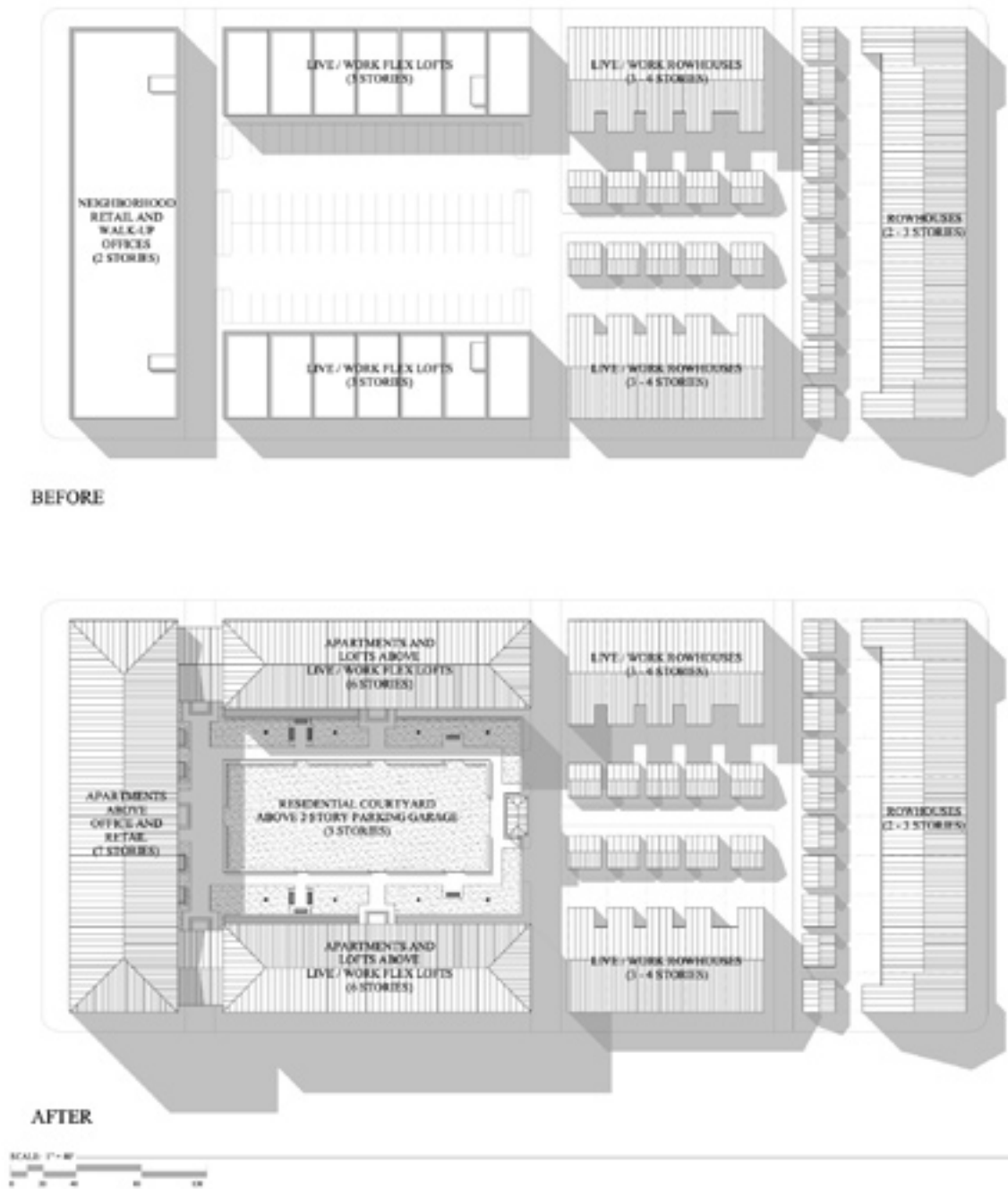




Figure 6.04: Preliminary Studies: Evolution of the Block

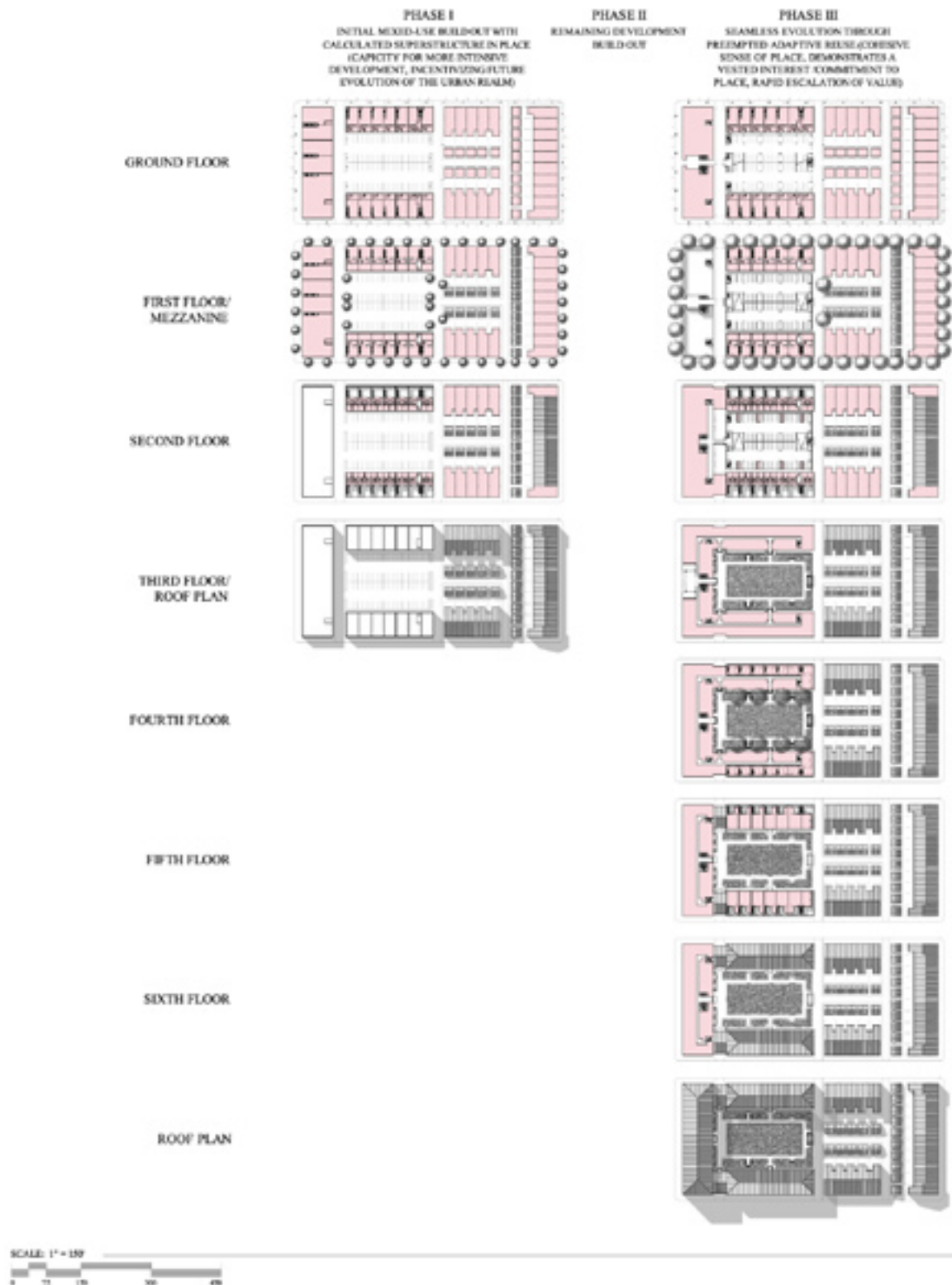


Figure 6.05: Preliminary Studies: Evolution of the Block

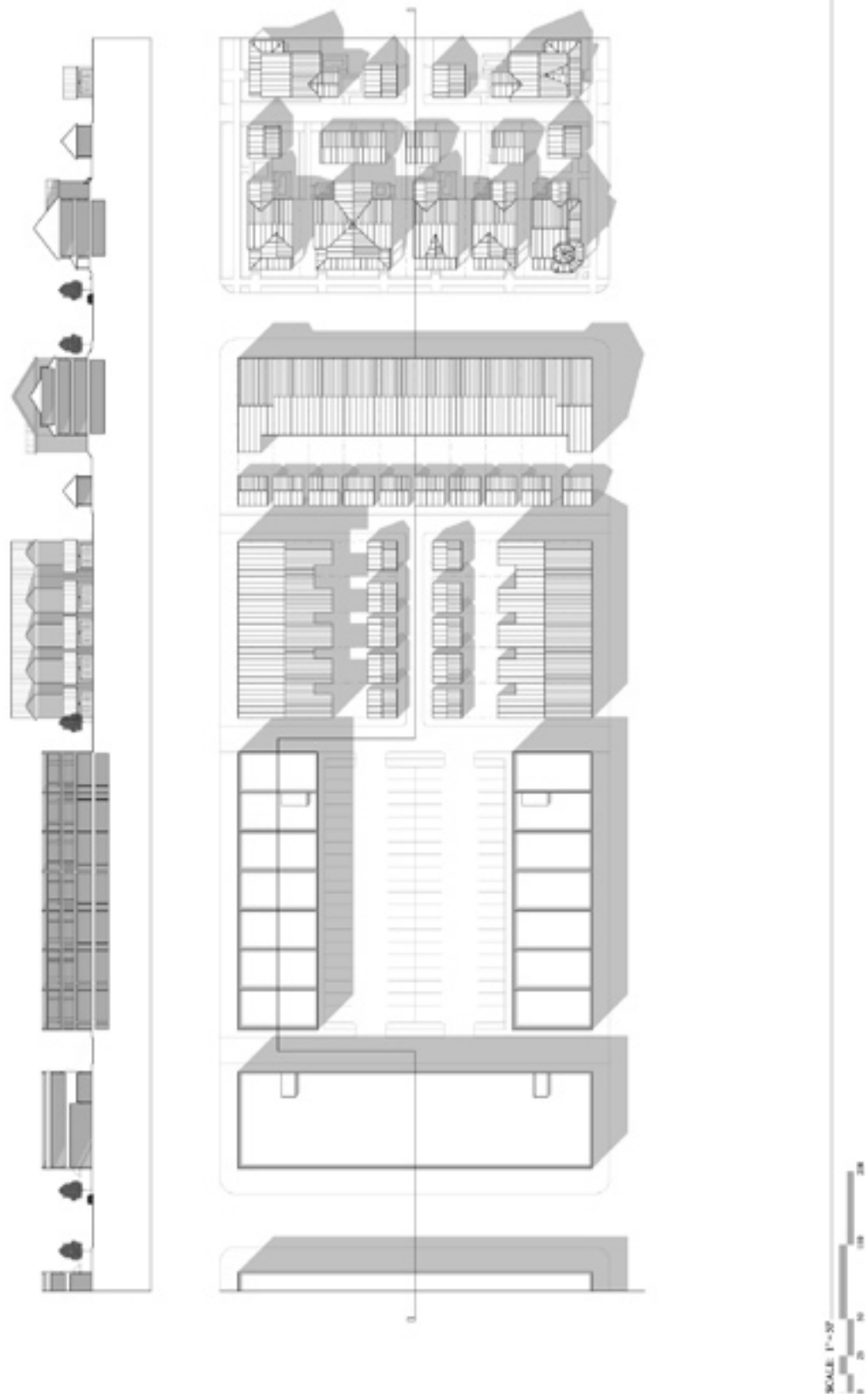


Figure 6.06: Preliminary Studies: Evolution of the Block

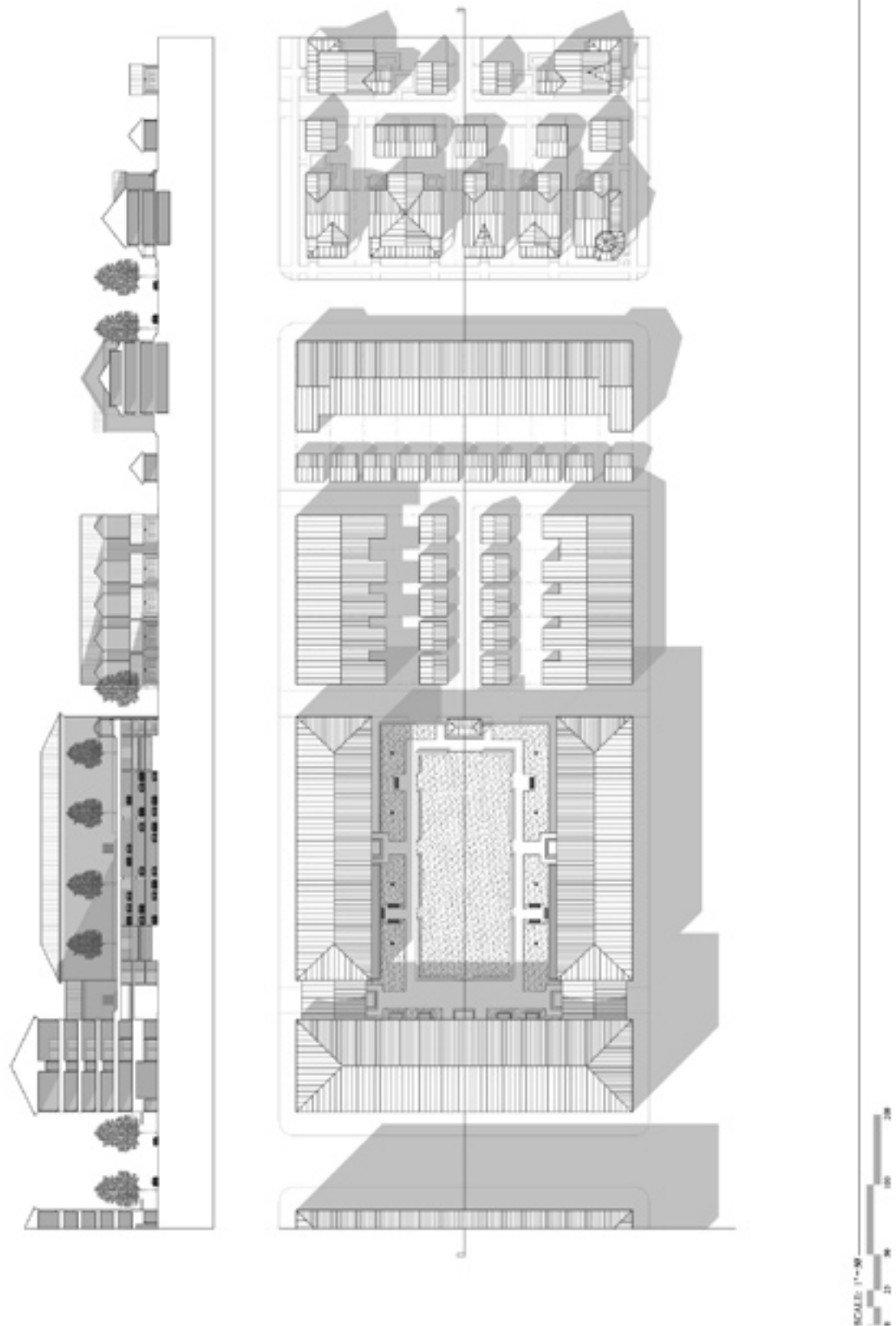
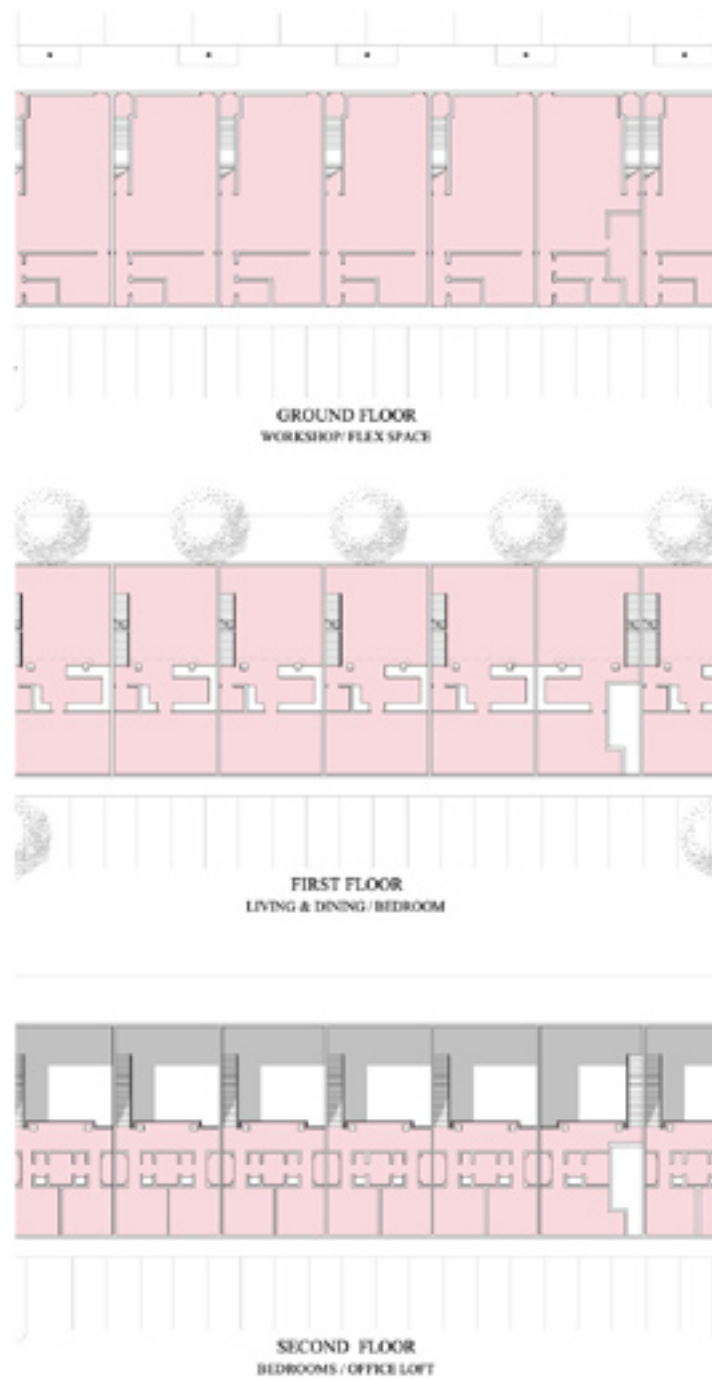


Figure 6.07: Preliminary Studies: Evolution of the Block (Unit plans)



SCALE: 1" = 20'

Figure 6.08: Preliminary Studies: Evolution of the Block (Unit plans)

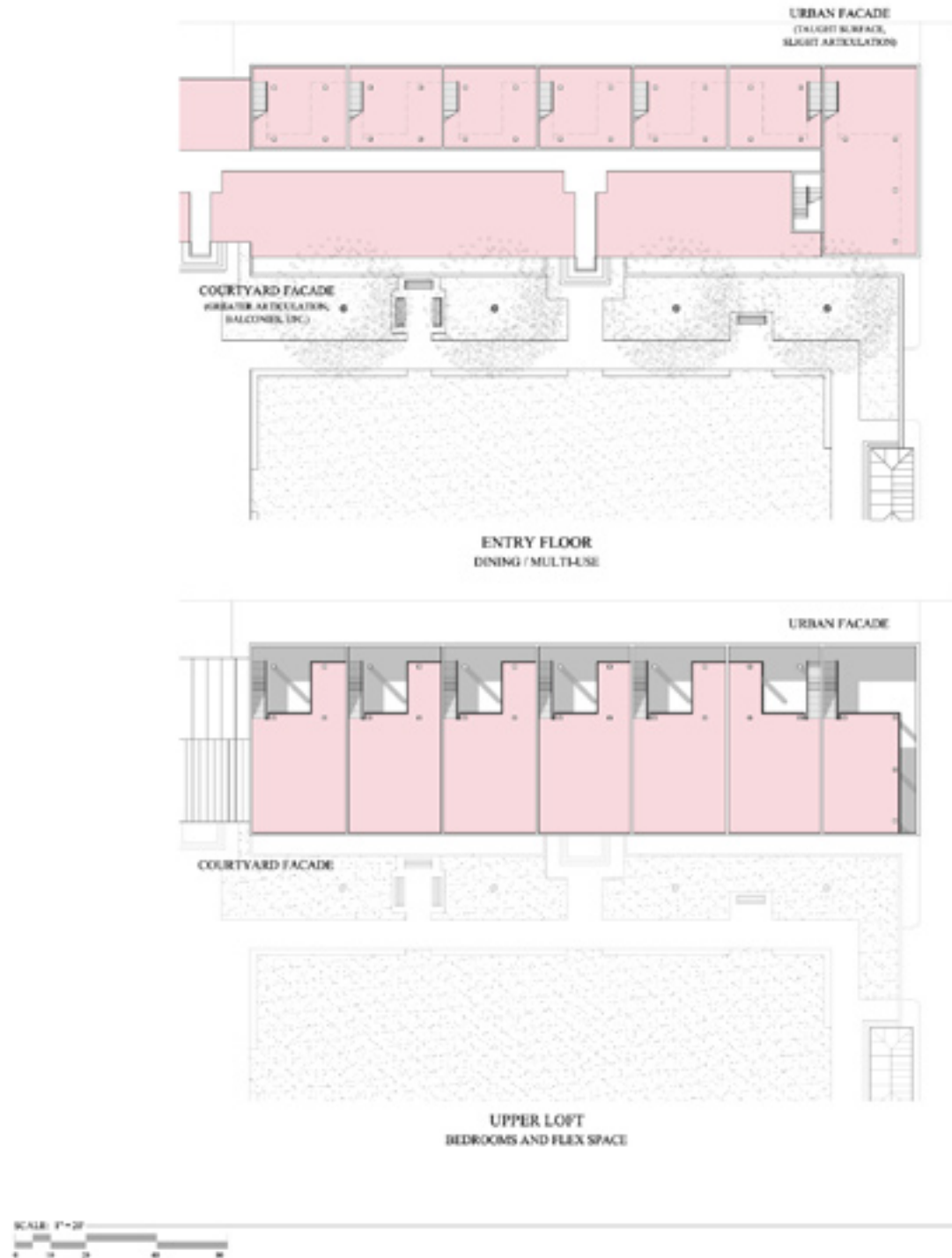


Figure 6.09: Preliminary Studies: Evolution of the Box

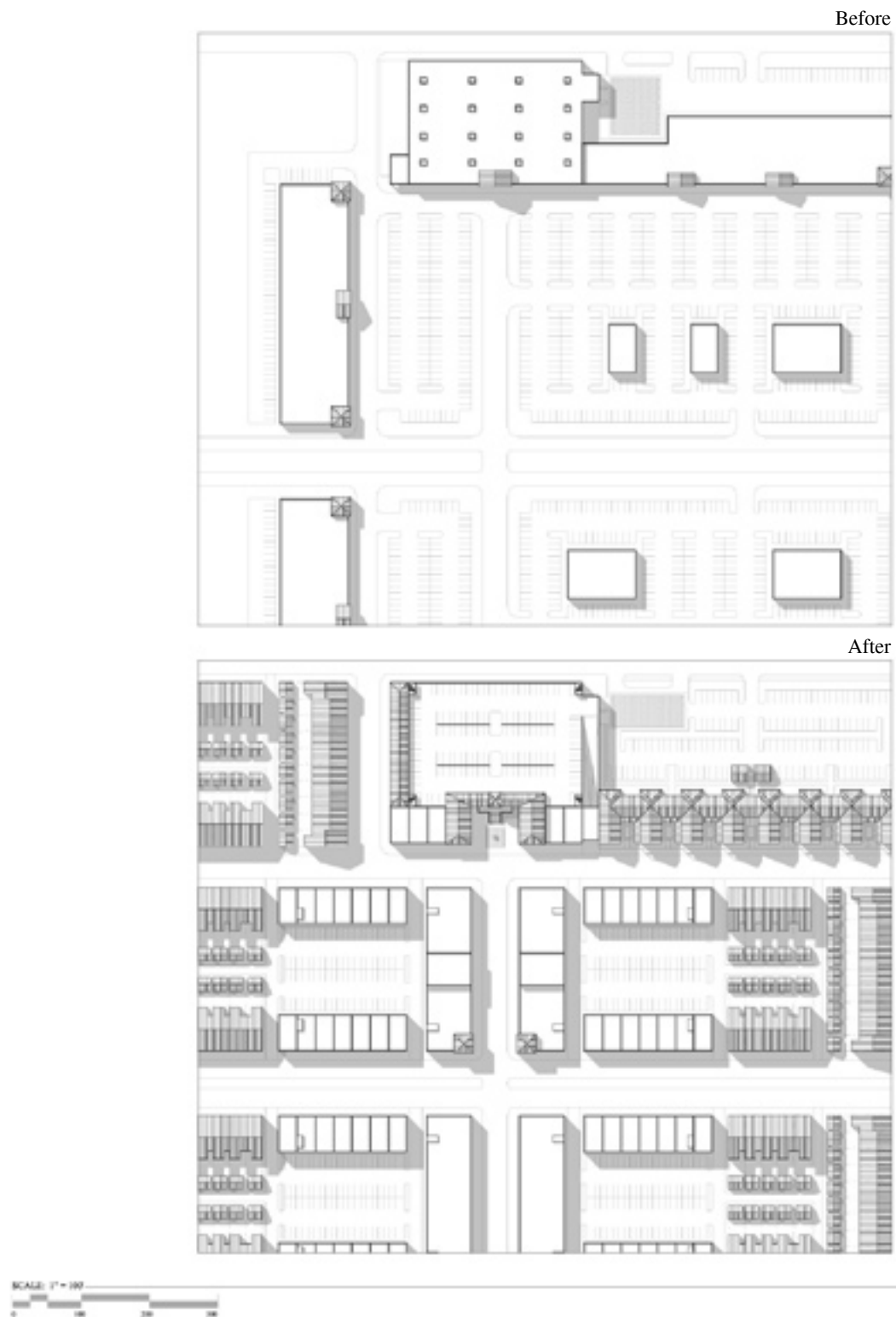


Figure 6.10: Preliminary Studies: Evolution of the Box

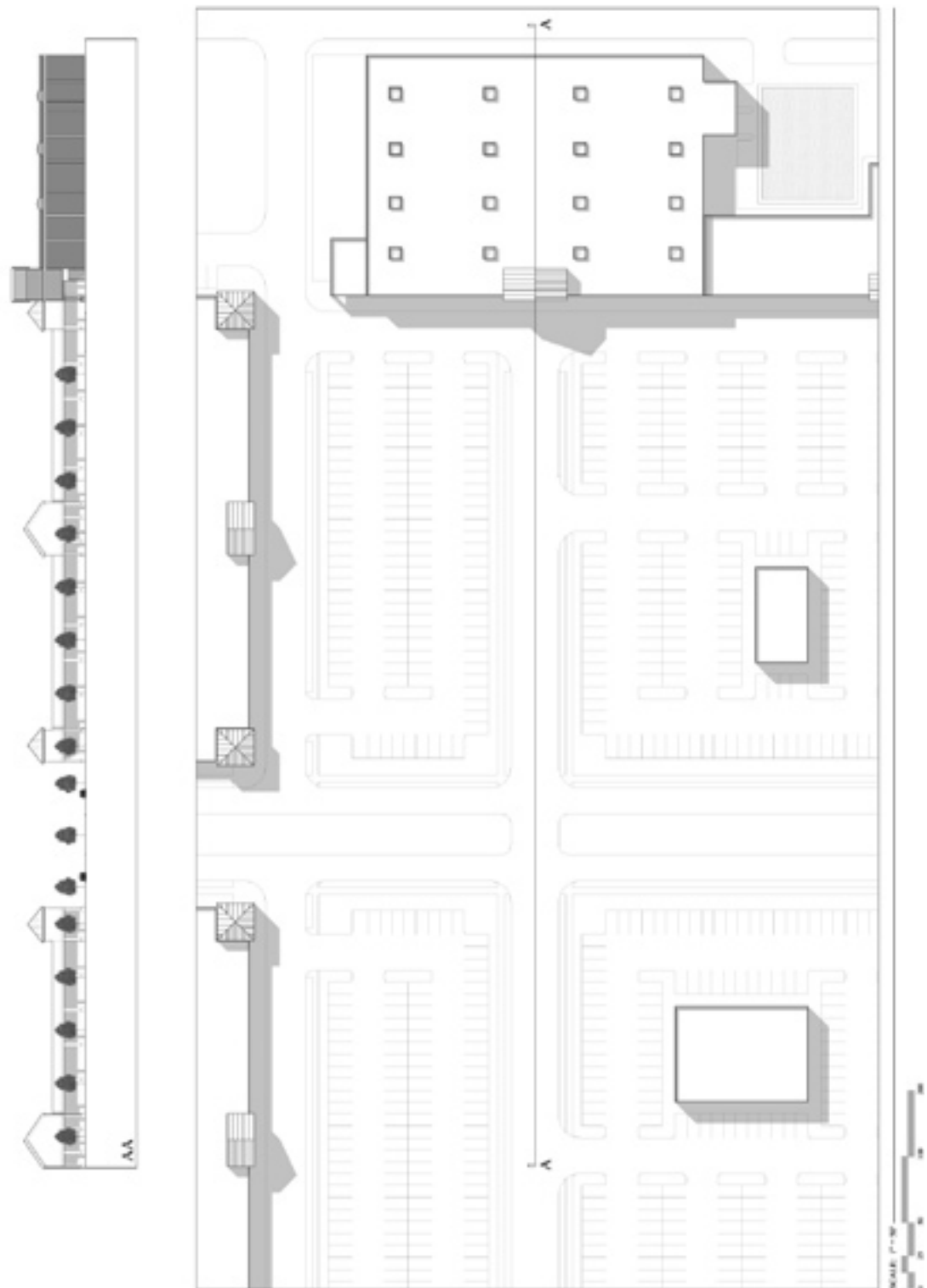




Figure 6.11: Preliminary Studies: Evolution of the Box

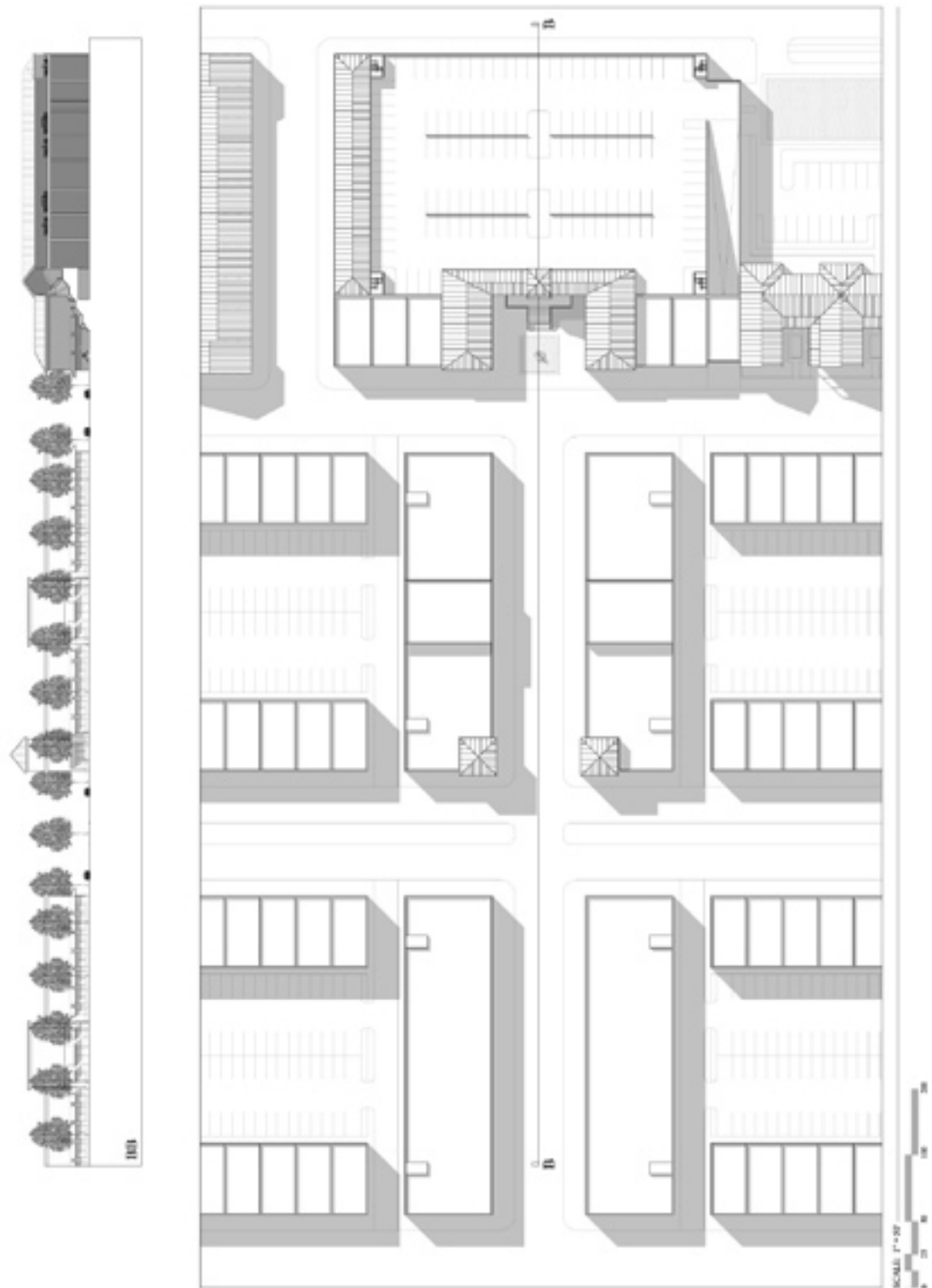


Figure 6.12: Final Studies: CSD unit plans

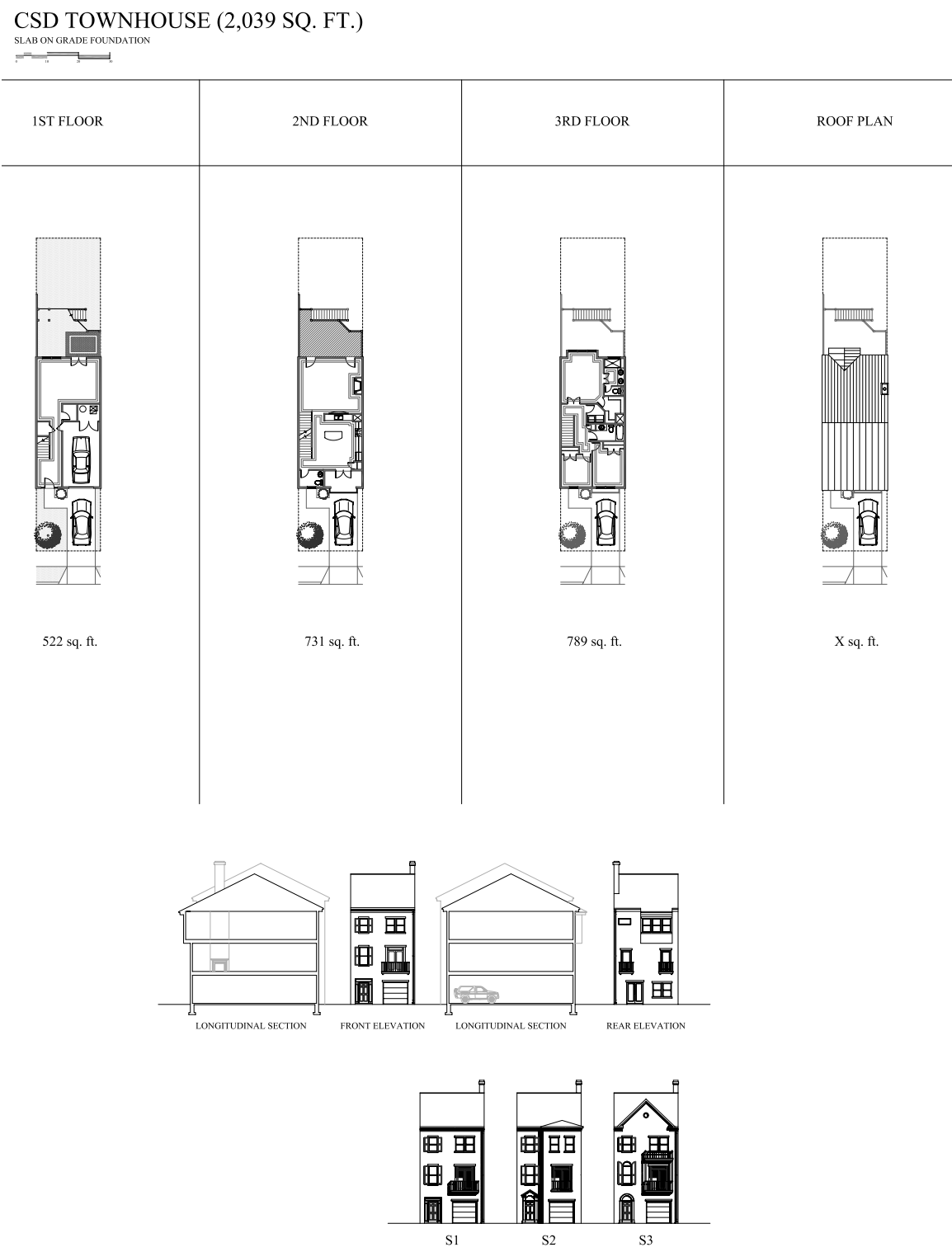
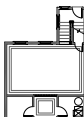
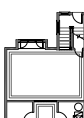
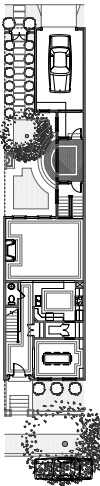
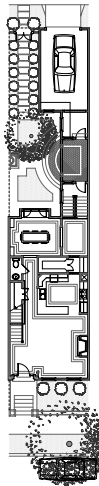
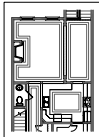
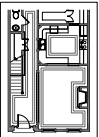
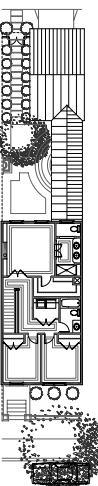
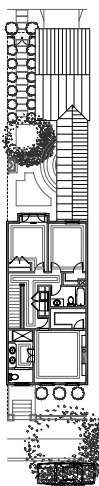


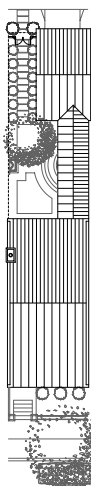
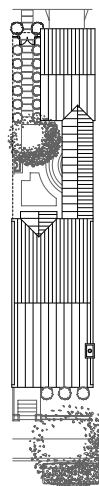


Figure 6.13: Final Studies: TND unit plans

TND ROWHOUSE (2,039 - 2,080 SQ. FT.)

CRAWLSPACE AND PARTIAL BASEMENT FOUNDATION



BASEMENT	1ST FLOOR	2ND FLOOR	ROOF PLAN
 A 352 sq. ft.  B 366 sq. ft.	 A 913 sq. ft.  B 926 sq. ft.  "TRADITIONAL" LAYOUT OPTION  	 A 774 sq. ft.  B 788 sq. ft.  MASTER BATH OPTION  	 A X sq. ft.  B X sq. ft.

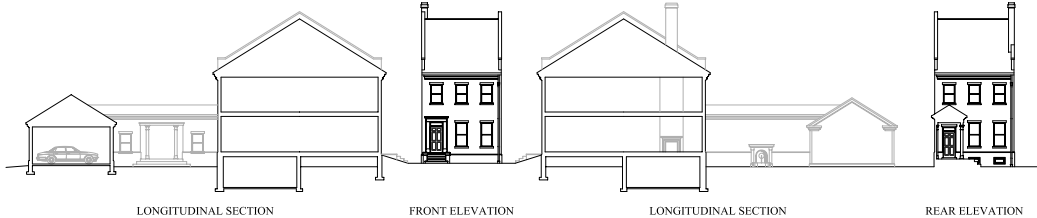


Figure 6.14: Final Studies: Comparative elevation studies

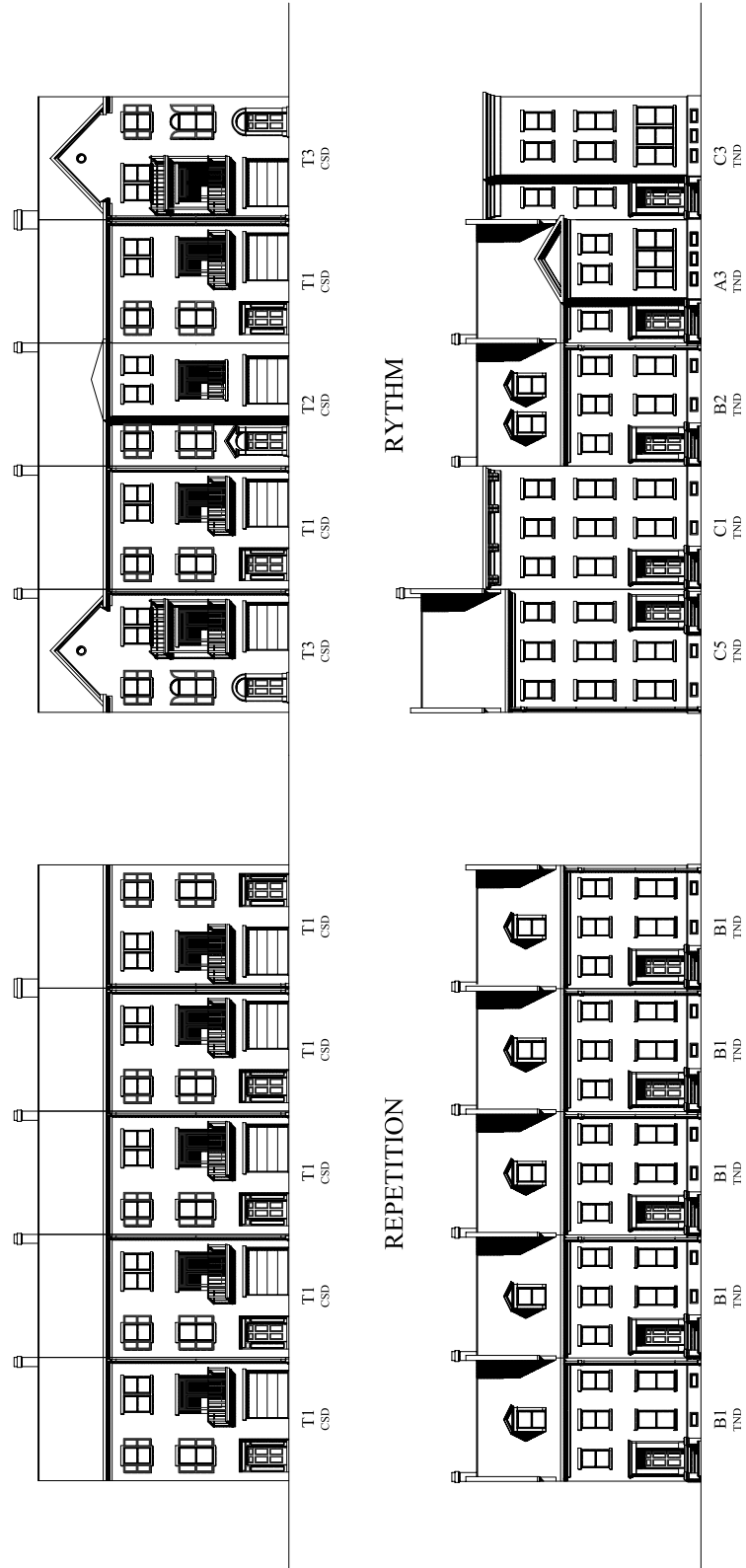
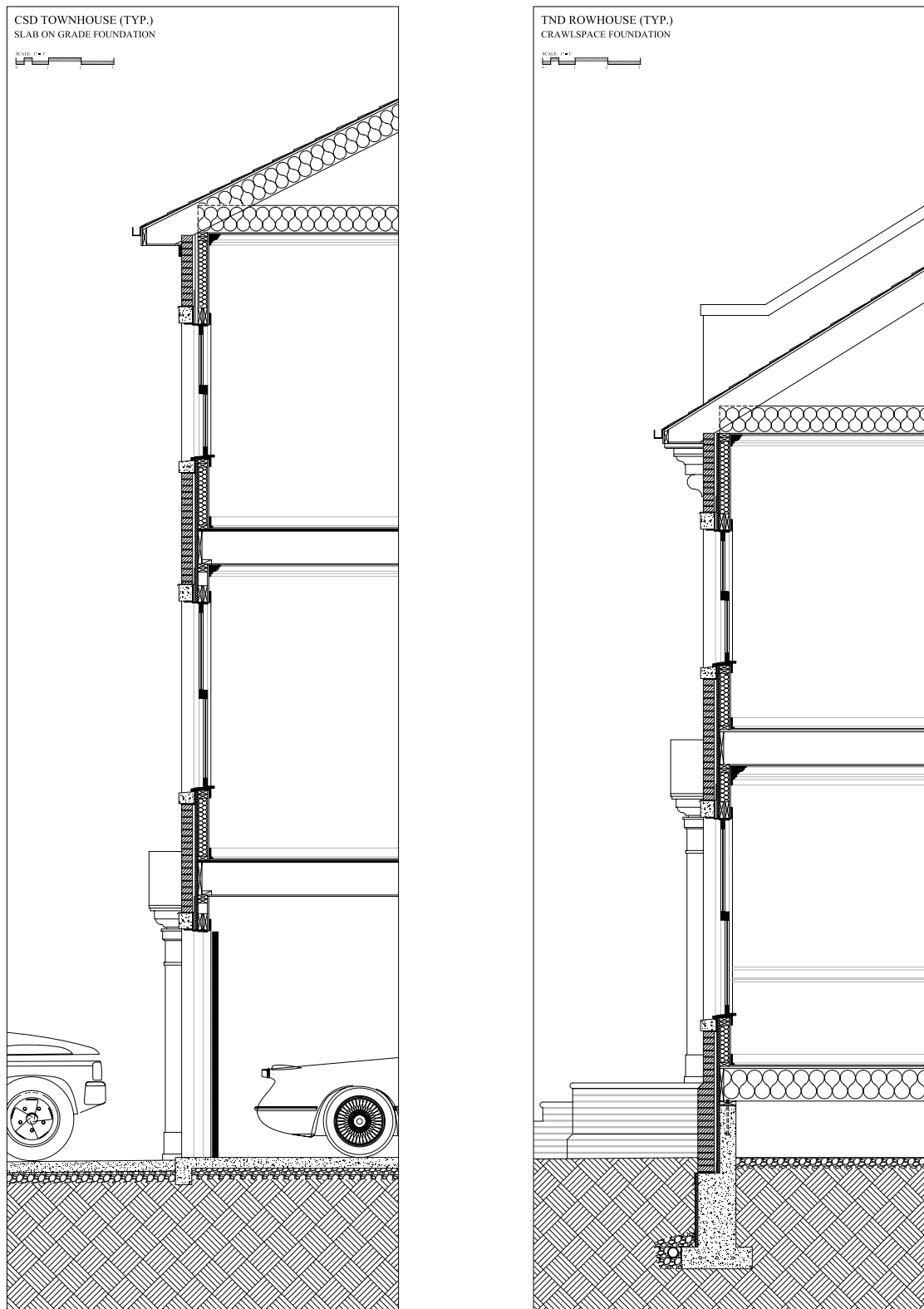


Figure 6.15: Final Studies: Comparative wall sections



## CHAPTER 7

### CONCLUSION

#### 7.1 Results of the Study

Table 7.1: Comparison of statistical findings:

	TND	CSD
<b>Roads:</b>		
Total:	155,000 linear ft.	166,000
Zero Load:	9%	30%
Single Load:	31%	5%
Double Load:	59%	65%
<b>Open Space:</b>		
Total:	550 acres	254 Acres
	43% (Contiguous)	20% (Fragmented)
<b>Lot Premiums:</b>		
Lots Adj. to Open Sp:		36%
Back to lot or road:	0%	64%
<b>Urban Unit:</b>		
Gross Land:	1.4% Less	
Pavement:	1.8% Less	
Impervious Surface:		23% Less
Private Open Sp:		

**Conflicting orientations/ polarization (lot vs. unit program): (\*Only applies to the CSD plan)**

Of lots backing to Open Space, only 20% of those back to a “natural corridor” (at least 300’ wide). 7% of the total lots fit this IDEAL Profile other 93% are more circumstantial. This demonstrates a significant loss of potential value as most CSD units that were studied have a strong rear orientation.



In general, the statistical findings of this study point to many commonly regarded notions of CSD and TND development. Much additional research is needed to substantiate any of these claims.

One common conception of developers is that TND's generally have more roads. Contrary to this belief, this study found that TND's have approximately 7% less linear feet of roads, yet this is still inconclusive as alleys and street widths must be accounted for.

One significant factor that was accounted for however was the relationship between linear feet of roadway and its relation to unit frontage. The study revealed that CSD requires over three times the amount of roads with zero frontage; in other words, roads that have no housing or retail located along them. This is a significant fact because although TNDs may have a greater quantity of overall road surface, a significant portion of the roads in a CSD (30% to be exact) are purely an expense to either the municipality (ultimately the taxpayer) or the developer. Zero frontage roads generate zero return as no property along them can be sold.

Another significant difference was in open space. Overall the CSD plan had only 20% public open space, whereas the TND plan had over 40% open space. This is a great difference, however the differences really become apparent once one looks at how fragmented the CSD open space is as compared to the contiguous nature of the TND plan. This is an area that needs further investigation to determine the exact difference.

Lastly, another significant difference that was observed has to do with the potential value that is generated by a unit's or lot's proximity to open space. It was found that nearly 100% of the CSD housing units had a primarily rear orientation (family room, kitchen and master suite were nearly always located at the rear of the unit). This conflicts with the fact that only 36% of the lots actually align with this orientation. The remaining 64% of lots either back to a road or are adjacent to another lot. Of this 36%, only 20% of those back to a "natural corridor" (A swath of open space that is at least 300' wide to allow for wildlife and vegetation to remain in a natural state. It has been shown that anything below this width will alter natural systems.) Therefore, only 7% of the total number of lots actually fits this "ideal" profile. This problem never arose in

the TND plan as units were sited according to common conditions in the plan. As with the other indices that were looked at this too requires additional research in order to substantiate these initial claims.

## **7.2 Conclusion**

I believe that the majority of our current landscape can best be summed up in the phrase “chaos from order.” Much of our landscape today is shaped by intensive formulaic rigor, yet ironically the result is a chaotic, homogenous, mass. The New Urbanism on the other hand offers an alternative to this pattern of growth, “order from chaos.” Although the underlying system may be more sophisticated, it is by no means any more complex. The unique aspect of NU development however is its ability to form continuous systems, larger systems from smaller ones, in turn, creating a synergy of elements and in turn creating value.

After researching and exploring this question for some time, I believe that such a method is not only possible, but necessary. In order for us to get the type of development that we desire we must be able to quantify those attributes that we desire.

The key is linking the essential nexus of the psychological/ intangible response with the physical form. In doing so I also believe that we will be able to establish that such design leads to greater economic, environmental and social value, also revealing that these systems are interrelated and codependent. For how can one monitor something by which they can not measure?

Although the study did not ultimately yield many of the objective results that I initially set out to define, I believe that many of the experiments that I began show promising potential. Maybe in the future, with greater advances in the fields of urban analysis and environmental psychology we will be able to better quantify such illusive phenomenon as a “sense of place” or the notion of community.

After spending nearly an entire year on this study I have also arrived at an alternative conclusion: That many of the qualitative characteristics that I sought to quantify defy rational analysis and should defy quantifiable methods; otherwise such characteristics would lose their

humanist and illusive aspects. In retrospect, I did learn a great deal by conducting such a study, yet after all this time I believe that some things are better off just left unexplained. One of the greatest facets of architecture and urbanism is their ability to generate a sense of wonder and mystery. If we rationalize and explain everything than one takes away the very essence of the art.

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